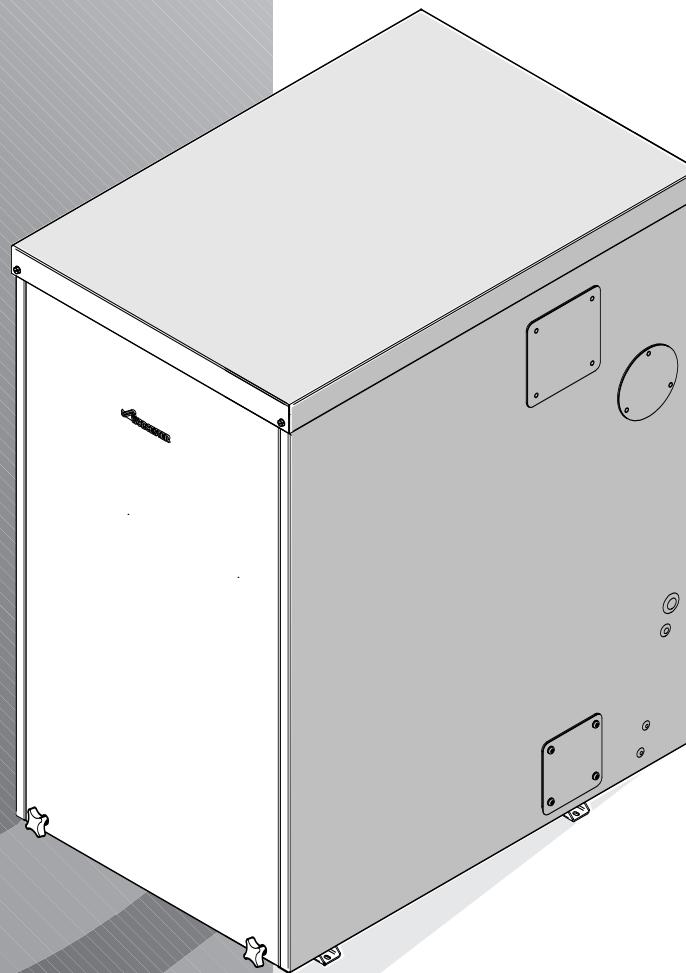




GREENSTAR CAMRAY EXTERNAL 12/18, 18/25, 25/32

FLOOR STANDING EXTERNAL OIL FIRED CONDENSING BOILER USING
BALANCED FLUE SYSTEM

FOR FULLY PUMPED OPEN VENT OR SEALED CENTRAL HEATING SYSTEMS AND DOMESTIC HOT WATER
CYLINDER



THE APPLIANCE IS FOR USE WITH 28 SECOND KEROSENE
ONLY

GB

**INSTRUCTION MANUAL
INSTALLATION COMMISSIONING
& SERVICING**

INSTALLATION & SERVICING INSTRUCTIONS

SYMBOLS USED IN THIS MANUAL:



Domestic hot water



Central heating



Room thermostat



Electricity supply

PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE STARTING INSTALLATION.

THESE INSTRUCTIONS ARE APPLICABLE TO THE WORCESTER APPLIANCE MODEL(S) STATED ON THE FRONT COVER OF THIS MANUAL ONLY AND MUST NOT BE USED WITH ANY OTHER MAKE OR MODEL OF APPLIANCE.

THE INSTRUCTIONS APPLY IN THE UK ONLY AND MUST BE FOLLOWED EXCEPT FOR ANY STATUTORY OBLIGATION.

THIS APPLIANCE MUST BE INSTALLED BY A COMPETENT PERSON. FAILURE TO INSTALL CORRECTLY COULD LEAD TO PROSECUTION.

COMPLYING WITH THE BUILDING REGULATIONS:

This heating appliance forms part of the controlled services for the building. It is law that all controlled services for buildings must comply with building regulations. You must be able to satisfy your Local Authority Building Control Body (LABC) that the work carried out concerning the installation and commissioning of this heating appliance has been carried out to a satisfactory standard.

OFTEC operate a competent persons scheme and registered installers are able to certify that their work complies with building regulations. Under the scheme;

- OFTEC must be informed about every installation.
- OFTEC will issue a building regulations compliance certificate to the householder and will notify the LABC.

OFTEC provide controlled document forms CD10 and CD11 for use during installation and commissioning respectively.

Other organisations operate self-certification schemes e.g. NAPIT and BESCA Ltd. and it may be possible for installers who are members of these organisations to self certify their work.

Alternatively you must submit a building control notice to the LABC before installing any boiler. The LABC will then arrange regular inspection visits during the work to ensure that the installation complies with the regulations.

IF YOU ARE IN **ANY DOUBT** CONTACT THE WORCESTER TECHNICAL HELPLINE.

DISTANCE LEARNING AND TRAINING COURSES ARE AVAILABLE FROM WORCESTER.

PLEASE LEAVE THESE INSTRUCTIONS WITH THE COMPLETED COMMISSIONING FORM AND THE USER MANUAL WITH THE OWNER OR WITH THE APPLIANCE AFTER INSTALLATION OR SERVICING. THE SERVICE INTERVAL RECORD CAN BE FOUND ON THE BACK PAGE OF THIS MANUAL.

ABBREVIATIONS USED IN THIS MANUAL:

Ø	Diameter
CH	Central Heating
DHW	Domestic Hot Water
TRV	Thermostatic Radiator Valve
IP	Ingress Protection
CF	Conventional flue
BF	Balanced flue
N/A	Not allowed
SEDBUK	Seasonal Efficiency of Domestic Boilers in the United Kingdom
OFTEC	Oil Firing Technical Association for the Petroleum Industry
IEE	Institute of Electrical Engineers
LABC	Local Authority Building Control Body

STORE THE APPLIANCE IN A DRY AREA PRIOR TO INSTALLATION.

Check List

Hardware/Literature pack

Item	Qty
Greenstar Camray External Installation/Servicing Instructions.....	1
Users Instructions	1
Hardware Pack.....	1
100mm Ø Services Duct.....	1
Condensate Trap Kit.....	1
Warranty Return Envelope	1

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SAFETY PRECAUTIONS

OIL SMELLS, LEAKS OR FUMES FROM THE APPLIANCE:

- ▶ Extinguish any naked flames.
- ▶ Isolate the electrical supply.
- ▶ Isolate the fuel supply to the boiler.
- ▶ Rectify fault.

HEALTH & SAFETY:

The appliance contains no asbestos and no substances have been used in the construction process that contravene the COSHH Regulations (Control of Substances Hazardous to Health Regulations 1988). Where applicable, the CE mark indicates compliance with relative EU Directives.

COMBUSTIBLE AND CORROSIVE MATERIALS:

Do not store or use any combustible materials (paper, thinners, paints etc.) inside or within the vicinity of the appliance.

The combustion air must be kept clear of chemically aggressive substances which can corrode the appliance and invalidate any warranty.

FITTING & MODIFICATIONS:

Fitting the appliance and any controls to the appliance may only be carried out by a competent engineer in accordance with these instructions and the relevant Installation Regulations.

Flue systems must not be modified in any way other than as described in the fitting instructions. Any misuse or unauthorised modifications to the appliance, flue or associated components and systems could invalidate the warranty. The manufacturer accepts no liability arising from any such actions, excluding statutory rights.

SERVICING:

Advise the user to have the system regularly serviced by a competent, qualified engineer (such as OFTEC registered personnel) using approved spares, to help maintain the economy, safety and reliability of the appliance.

INSTALLATION REGULATIONS

Failure to install appliances correctly could lead to prosecution.

The appliance should be installed by a competent person. The person installing the appliance should be aware of the Health and Safety at Work Act and take appropriate action to ensure that the regulations are adhered to. In order to give optimum efficiency and trouble free operation the appliance must be commissioned by a qualified OFTEC engineer.

The compliance with a British Standard does not, in itself, confer immunity from legal obligations. In particular the installation of this appliance must be in accordance with the relevant requirements of the following British Standards and regulations in respect of the safe installation of equipment:

BS 5410: part 1: Code of practice for Oil Fired Boilers.

BS 799: part 5: Specification for Oil Storage Tanks.

BS 7593: Code of Practice for treatment of water in domestic hot water central heating systems.

BS 5449: part 1: Specification for forced circulation hot water central heating for domestic premises.

BS 5955: part 8: Specification for the installation of thermoplastic pipes and associated fittings for use in domestic hot and cold water services and heating systems.

BS 7291: Thermoplastic pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings.

BS 7074: part 1: Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems.

BS 7671: IEE Wiring Regulations, current edition.

BS 1362: Specification for general purpose fuse links for domestic and similar purposes.

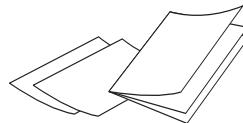
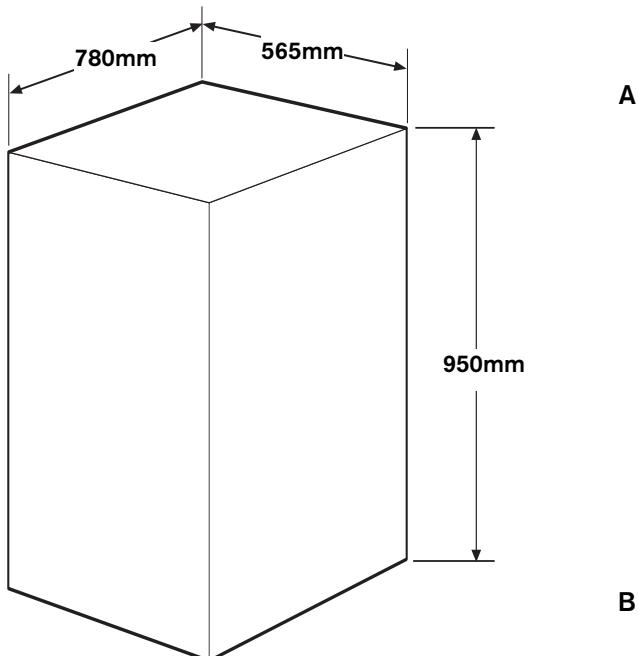
The Building Regulations Part J and L1 England and Wales; Part F and Part J Section III Scotland; Part L and Part F Northern Ireland.

Local water company bye-laws.

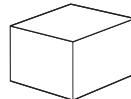
The Control of Pollution (Oil) Regulations.

OFTEC Standards.

Where no specific instruction is given, reference should be made to the relevant codes of practice.



B



C



D



E

STANDARD PACKAGE:

A - Floor standing oil fired condensing boiler for open vent and sealed domestic central heating and mains fed hot water.

B - Literature pack.

C - Condensate trap kit.

D - Hardware pack.

E - 100mmØ services duct.

Check List

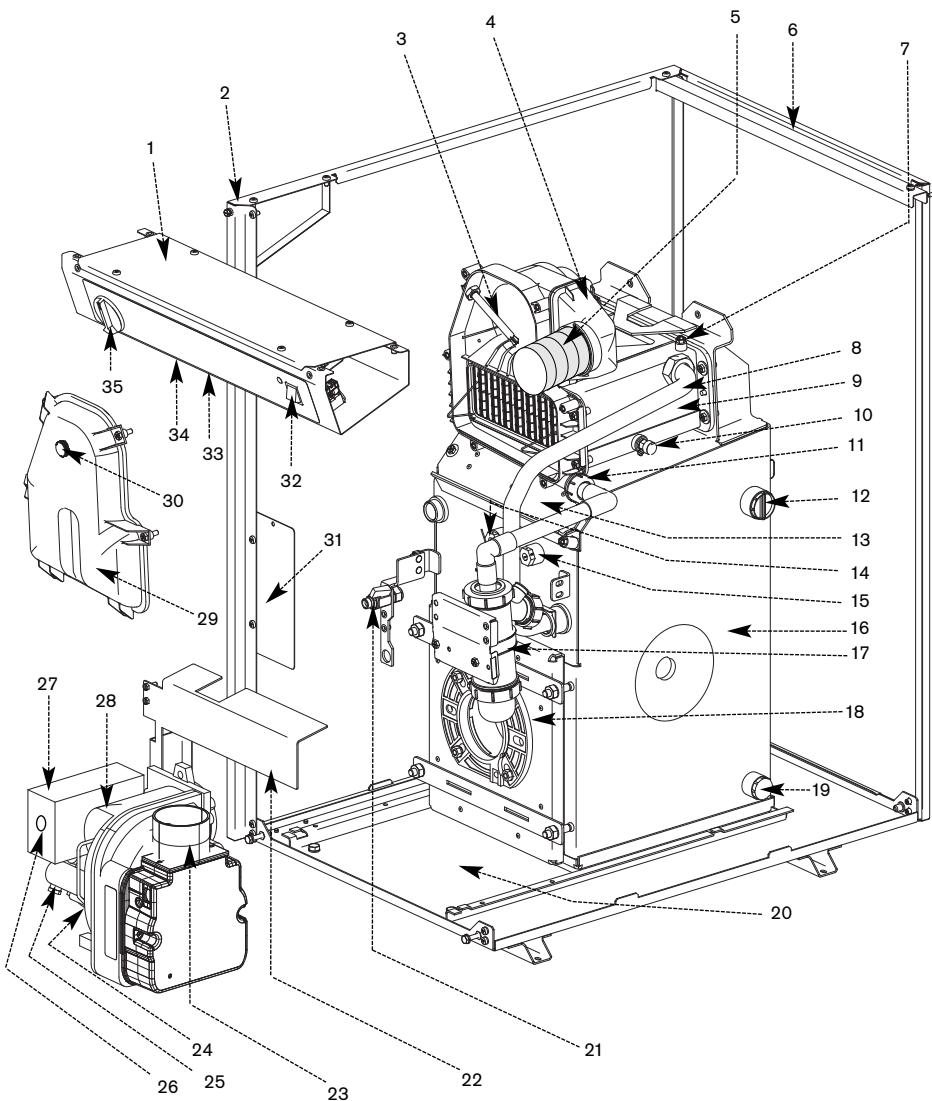
Item	Qty
Greenstar Camray External Installation/Servicing Instructions.....	1
Users Instructions	1
Hardware Pack.....	1
100mm Ø Services Duct.....	1
Condensate Trap Kit.....	1
Warranty Return Envelope	1

TECHNICAL DATA

DESCRIPTION	UNITS	12/18	18/25	25/32
Central Heating				
Primary water capacity (total)	litres	23	23	21
Maximum static head	metres	30	30	30
Minimum static head	metres	1	1	1
Water side resistance (20°C difference)	mbar	26	52	69
Max. permissible sealed system operating pressure in accordance with WRAS guidelines	bar	2.5	2.5	2.5
Flue				
Exit flue gas mass flow	kg/hr	29	40	51
Pipework connections				
Fuel line (compression)	mm	10	10	10
Return	mm	22	22	28
Flow/optional open vent	BSP	1	1	1 1/4
Drain/optional feed and expansion	BSP	3/4	3/4	3/4
Condensate (polypropylene)	mm	21.5	21.5	21.5
Electrical				
Electrical power supply voltage	AC...V	230	230	230
Frequency	Hz	50	50	50
Max. power consumption	W	150	160	160
Thermostats				
Control thermostat range (cut in/cut out)	°C	55/81	55/81	55/81
Control thermostat differential	°C	5	5	5
Boiler high limit thermostat set point	°C	95	95	95
Boiler manual reset overheat thermostat set point	°C	105	105	105
Flue reset overheat thermostat set point	°C	110	110	110
General Data				
Maximum hearth temperature	°C	<100	<100	<100
SEDBUK (Band A)	%	93.1	93.2	94.2
Appliance protection rating	IP	45	45	45
Weight (excluding packaging)	kg	114	115	122
Emissions class for NOx and CO	class	3	3	3

LAYOUT & COMPONENTS

The diagram opposite excludes the top, front and RH side casing panels.



- 1 CONTROL BOX ASSEMBLY
- 2 CASING SIDE PANEL
- 3 FLUE OVERHEAT THERMOSTAT PHIAL
- 4 AIR INLET CASING
- 5 FLEXIBLE AIR DUCT (CONNECTING TO AIR INTAKE ON BURNER)
- 6 CASING SUPPORT PANEL
- 7 SECONDARY HEAT EXCHANGER BLEED POINT (ONE ON EITHER SIDE)
- 8 HEAT EXCHANGER FLOW PIPE
- 9 SECONDARY HEAT EXCHANGER
- 10 SECONDARY HEAT EXCHANGER DRAIN
- 11 CONDENSATE OUTLET
- 12 FLOW/OPTIONAL OPEN VENT CONNECTION
- 13 BAFFLE RETAINER ACCESS DOOR
- 14 CONTROL & MANUAL RESET OVERHEAT THERMOSTAT PHIAL
- 15 AUTO-RESET HIGH LIMIT THERMOSTAT PHIAL
- 16 PRIMARY HEAT EXCHANGER
- 17 CONDENSATE TRAP (supplied)
- 18 COMBUSTION CHAMBER ACCESS DOOR
- 19 DRAIN/OPTIONAL FEED & EXPANSION CONNECTION
- 20 BASE PLATE AND OIL DRIP TRAY
- 21 OIL SUPPLY ISOLATING VALVE
- 22 DEFLECTOR PLATE
- 23 BURNER AIR INTAKE (CONNECTED BY FLEXIBLE DUCT (5) TO AIR INLET CASING (4))
- 24 BURNER MOTOR (BEHIND PLASTIC COVER)
- 25 OIL PUMP (BEHIND PLASTIC COVER)
- 26 LOCKOUT RESET BUTTON (ON FRONT OF BURNER CONTROL BOX)
- 27 BURNER CONTROL BOX (BEHIND PLASTIC COVER)
- 28 RIELLO RDB BURNER
- 29 FLUE MANIFOLD ACCESS COVER
- 30 FLUE GAS SAMPLING POINT
- 31 DATA LABEL
- 32 MODE SWITCH
- 33 BOILER OVERHEAT RESET BUTTON
- 34 FLUE OVERHEAT RESET BUTTON
- 35 TEMPERATURE CONTROL KNOB

CLEANING PRIMARY SYSTEMS

IMPORTANT: All the following Pre-Installation sections must be read and requirements met before starting boiler or flue installation.

CAUTION: ISOLATE THE MAINS SUPPLIES BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS.

IMPORTANT: Debris from the system can damage the boiler and reduce efficiency. Failure to comply with the guidelines for the use of water treatment with the appliance will invalidate the appliance warranty.

BEFORE CLEANING THE SYSTEM:

ENSURE THE SYSTEM AND PIPEWORK IS IN GOOD WORKING ORDER.

FLUSH THE EXISTING SYSTEM WITH A POWER FLUSHING MACHINE OR WITH A CHEMICAL CLEANER BEFORE INSTALLING NEW COMPONENTS.

CLEANING THE PRIMARY SYSTEM:

- ▶ Cleanse the system in accordance with BS 7593.
- ▶ Fill the system with cold mains water to the recommended pressure and check for leaks.
- ▶ Open all drain cocks and drain the system.
- ▶ Close drain cocks and add a suitable flushing agent at the correct strength for the system condition in accordance with the manufacturer's instructions.
- ▶ Circulate the flushing agent before the boiler is fired up.
- ▶ Run the boiler and system at normal operating temperature in accordance with the manufacturer's instructions.
- ▶ Drain and thoroughly flush the system to remove the flushing agent and any debris.

IMPORTANT: The appliance provides a permanent external electrical supply for servicing and must therefore be fed via a circuit breaker incorporating earth leakage protection.

MAINS SUPPLY

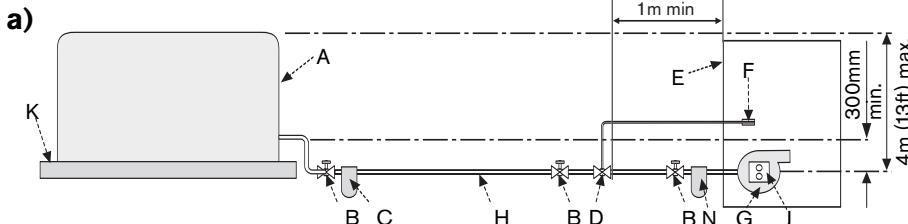
ELECTRIC SUPPLY:

- Supply: 230V - 50Hz.
- Cable: PVC insulated 0.75mm² (24 x 0.2mm) temperature rated to 90°C.
- Protection IP45.
- External 5A fuse to BS 1362.
- The appliance must be earthed.
- Please refer to IEE regulations for cross bonding requirements.
- It must be possible to isolate the appliance from the electric supply with at least a 3mm contact separation in both poles supplying the appliance.
- Wiring between the appliance and the electrical supply must comply with IEE wiring regulations and any local regulations which may apply for fixed wiring to a stationary appliance.
- Any system connected to the boiler must not have a separate electrical supply.

A	- Oil storage tank.	H	- Oil supply pipe.
B	- Isolating valve.	J	- Oil pump.
C	- Oil strainer & water separator.	K	- Full base (plastic tanks).
D	- Fire valve to BS 5410.	L	- Non-return valve.
E	- External casing.	M	- De-aerator.
F	- Fire valve sensor.	N	- Oil filter (16µm max filtration size)
G	- Oil burner.		

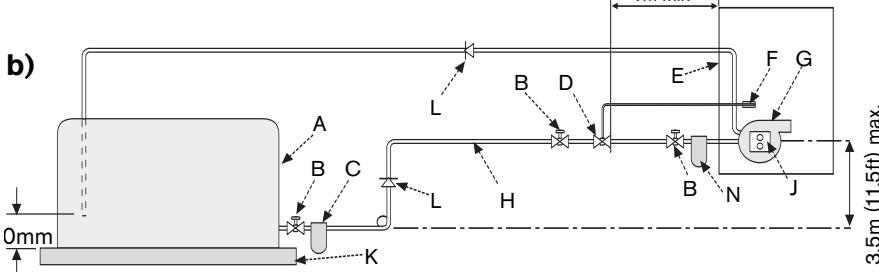
NOTE: All dimensions are in metres unless stated otherwise.

The maximum pipe run figures are based on using copper pipe with an inside diameter of 2mm less than the Ø.



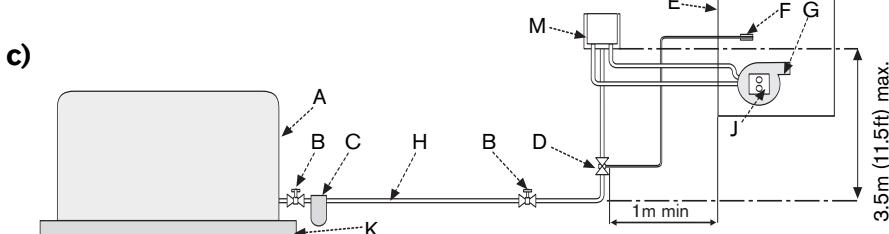
MAXIMUM PIPE RUN FOR SINGLE PIPE GRAVITY FEED SYSTEM

HEAD	10mmØ	12mmØ	HEAD	10mmØ	12mmØ
0.5	12	30	2.5	62	100
1.0	25	69	3.0	74	100
1.5	37	91	3.5	87	100
2.0	49	100	4.0	99	100



MAXIMUM PIPE RUN FOR DOUBLE PIPE SUB-GRAVITY FEED SYSTEM

HEAD	10mmØ	12mmØ	HEAD	10mmØ	12mmØ
0	50	100	2.0	26	66
0.5	44	100	2.5	20	50
1.0	38	95	3.0	14	37
1.5	32	80	3.5	8	22



MAXIMUM PIPE RUN FOR SINGLE PIPE SUCTION LIFT WITH DE-AERATOR

HEAD	FUEL FLOW RATE				HEAD	FUEL FLOW RATE			
	2.5kg/h	5kg/h	10kg/h	10kg/h		2.5kg/h	5kg/h	8mmØ	10mmØ
0	100	55	26	100	2.0	60	30	14	65
0.5	95	45	23	100	2.5	45	25	11	50
1.0	80	40	20	90	3.0	35	15	8	35
1.5	70	35	17	75	3.5	25	10	5	20

The table and illustration above is a guide only and does not in any way override the de-aerator manufacturers instructions.

OIL SUPPLY

OIL SUPPLY :

- This appliance is suitable for 28 second kerosene only, no other fuel must be used.
- Plastic or steel tanks should be installed to BS 5410. A steel tank should conform to BS 799: part 5 and have a slope of 1 in 24 away from the outlet valve with a sludge cock at its lower end.
- Do not use galvanised steel tanks or pipework for the oil supply system.
- Do not use soldered joints on the oil supply pipework.

a) Single pipe gravity feed system:

The oil storage tank (A) must be positioned so that the oil level does not exceed 4 metres above the level of the burner oil pump (J) and in addition the oil level must be at least 300mm above the oil pump (J). Where the maximum oil level in the oil storage tank exceeds 4 metres, a head breaking device must be installed between the tank (A) and the burner oil pump (J).

b) Double pipe sub-gravity feed system:

Maximum suction height 3.5 metres. Non-return valves must be fitted to the inlet and return oil line between the oil pump (J) and oil storage tank (A).

c) Single pipe suction lift with de-aerator

Maximum suction height 3.5 metres. The oil tank (A) must be positioned below the oil pump (J). Create an inlet and return loop between the de-aerator (M) and oil pump (J).

A non-return valve must be incorporated within the de-aerator or fitted to the oil line between the oil storage tank (A) and the de-aerator (M).

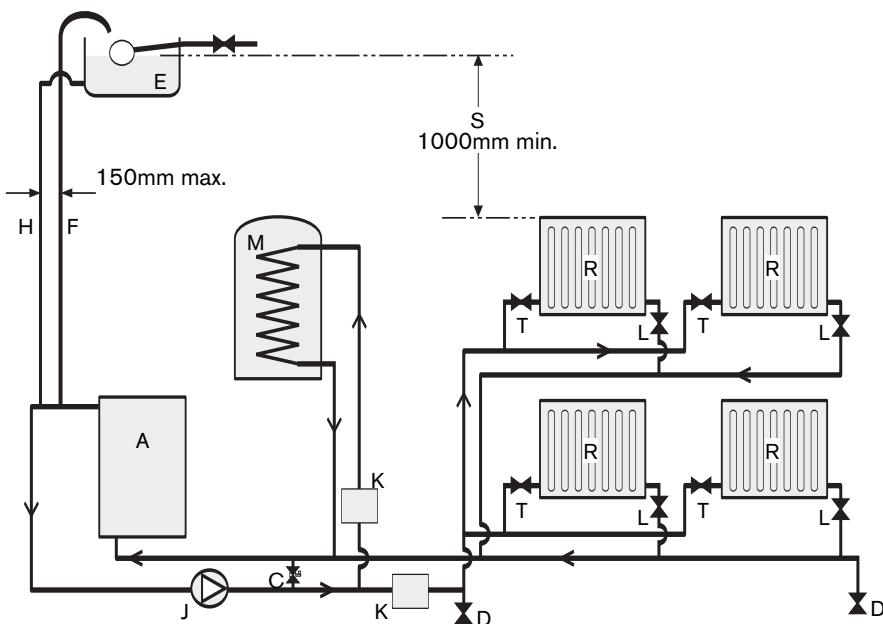
A top feed oil tank fitted with a de-aerator using an internal non-return valve should have any non-return valves fitted in the base of the tank to the suction line removed to assist purging air from the oil line.

Pipework

- Use copper pipe of the correct diameter according to the information shown opposite. Use flexible hoses to connect to the oil pump (J).
- Lay the oil supply pipe (H) as straight and level as possible to avoid air pockets and unnecessary friction losses. Route away from the boiler access door or other hot surfaces.
- Install a manual isolating valve (B) to the oil supply pipe (H), as close to the oil storage tank (A) as possible.
- Fit an oil strainer and water separator (C) to the oil supply pipe, near the oil storage tank. Fit an additional oil filter (N, 16µm max filtration size) close to the boiler, but not inside the boiler casing.
- Fit a fire valve in accordance with BS 5410. The fire valve (D) should be fitted externally to the building with the fire valve sensor (F) located within the appliance case. A fire valve with a shut off temperature of 85°C or higher is recommended to avoid the possibility of nuisance shut offs.
- A capillary type valve provides a neat and simple installation. Alternatively, a fusible link or electrical system may be used.

Under no circumstances should a combination isolating/fire valve be used as the sole fire protection device.

TYPICAL OPEN VENT SYSTEM:

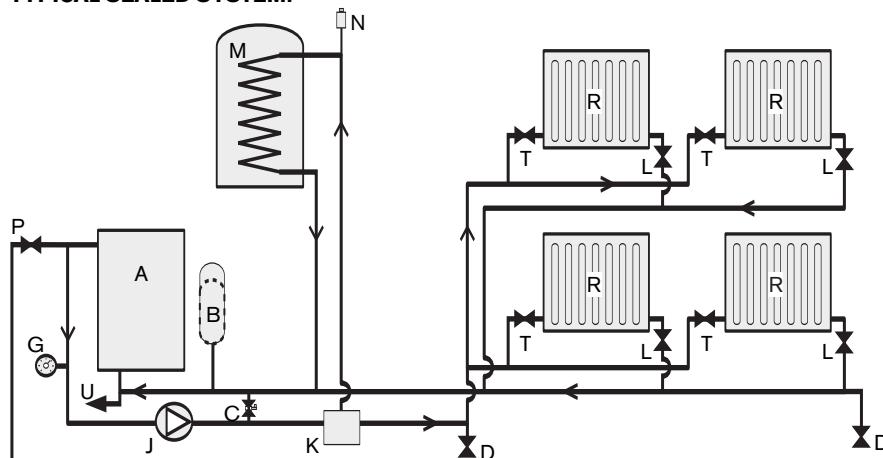


A - Appliance.
 B - Expansion vessel.
 C - Automatic bypass valve.
 D - Drain cock.
 E - Feed and expansion cistern.
 F - Feed and expansion 15mmØ min.

G - Pressure gauge.
 H - Open vent 22mmØ min.
 J - Circulating pump.
 K - Zone valve.
 L - Lockshield valve.
 M - Hot water cylinder.
 N - Automatic air vent.

P - Pressure relief discharge.
 R - Radiators.
 S - Static head.
 T - Thermostatic radiator valve (TRV).
 U - To filling system.

TYPICAL SEALED SYSTEM:



IMPORTANT: The boiler should not be allowed to operate with a return temperature of less than 40°C when the system is up to operating temperature.

PRIMARY SYSTEM PLASTIC PIPEWORK:

- Do not use plastic pipework on sealed systems, *apart from underfloor heating correctly installed as detailed below.
- Any plastic pipework used on an open vented system must have a polymeric barrier with 1000mm (minimum) length of copper or steel pipe connected to the boiler.
- Plastic pipework used for underfloor heating must be correctly controlled with a thermostatic blending valve limiting the temperature of the circuits to approx. 50°C. The pipework from the boiler to the blending valve must be in copper or steel (protected from corrosion).

PRIMARY SYSTEM/CONNECTIONS/VALVES:

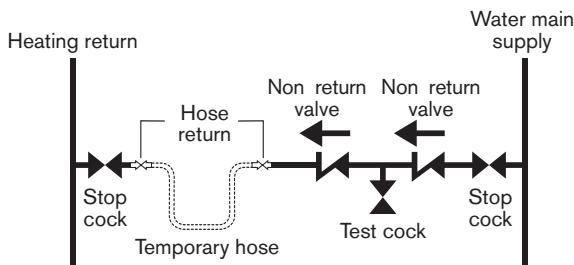
- Do not use galvanised pipes or radiators.
- All system connections, taps and mixing valves must be capable of sustaining a pressure of 3 bar.
- Radiator valves should conform to BS 2767:10.
- All other valves should conform to BS1010.
- On new installations TRVs must be used on all radiators except the radiator where the room thermostat is sited, this must be fitted with lockshield valves and left open. All installations should have TRVs fitted to radiators within the sleeping accommodation.
- An automatic bypass valve must be connected between the heating flow and return where TRVs are used on all radiators, fitted to give at least a 3 metre circuit when activated.
- Drain cocks are required at all the lowest points on the system.
- Air vents are required at all high points on the system.

OPEN VENT PRIMARY SYSTEM:

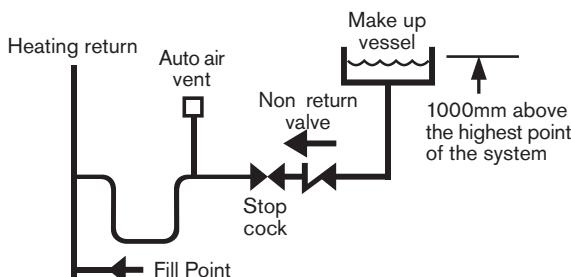
- The open vent pipe (H) and feed and expansion pipe (F) must rise continuously from the appliance.
- The feed and expansion cistern (E) must be positioned to provide a static head (S) of at least 1 metre above the highest point in the heating system to the water level in the feed and expansion cistern (E).
- No valve shall be fitted in the open vent pipe (H) or the feed and expansion pipe (F).
- The open vent pipe (H) must be at least 22mmØ.

FULLY PUMPED SEALED PRIMARY SYSTEM:

- A pressure relief valve (P), spring loaded safety valve set to operate at 3bar, must be fitted to the heating flow pipe as close as possible to the boiler or onto one of the boiler top 1" / 1 1/4" BSP outlets.
- An expansion vessel (B) must be fitted to the heating return pipe as close as possible to the boiler and pressurised for the system volume according to the instructions supplied with the vessel.
- A pressure gauge (G), 3 bar minimum, must be fitted to the heating flow pipe or one of the boiler 1" / 1 1/4" BSP outlets.
- An automatic air vent (N) must be fitted.

**FILLING PRIMARY SEALED SYSTEMS:**

- Filling the system must comply with one of the methods shown opposite.
- The filling point must be at low level and must never be a permanent direct fixing to the mains water supply.
- Filling loops must be WRAS approved.



CONDENSATE &

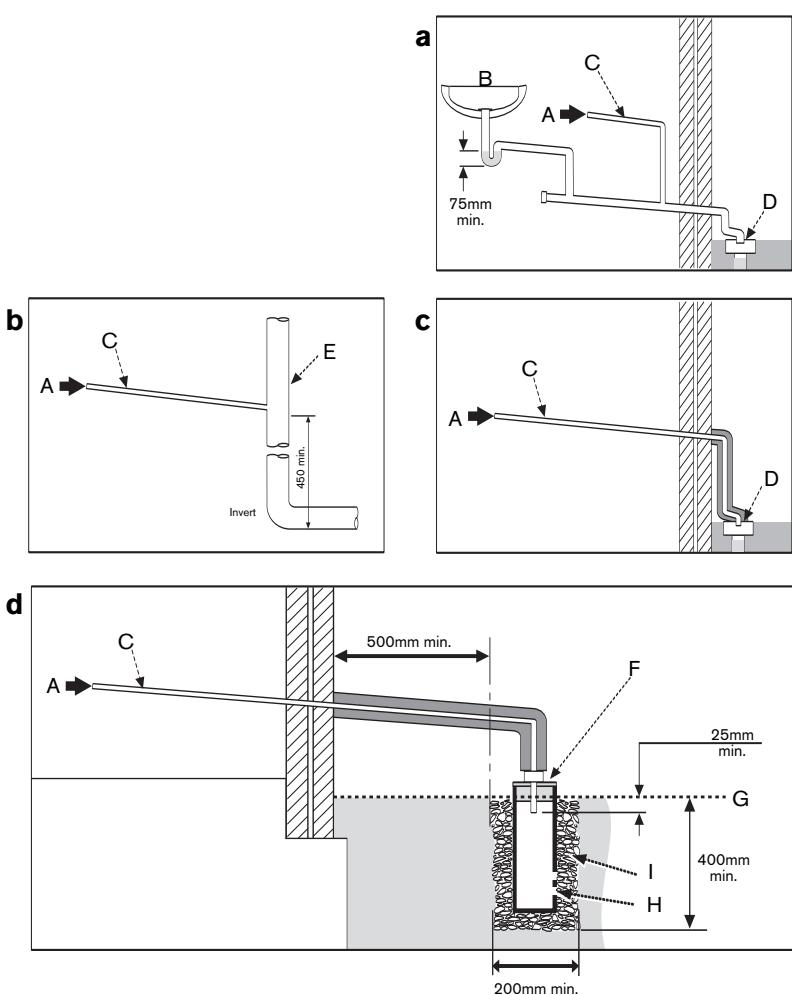
PRESSURE RELIEF PIPEWORK

CONDENSATE PIPEWORK:

- All national and, where appropriate, local regulations for the discharge and neutralisation of condensate should be followed.
- The condensate pipe must be a minimum of 21.5mmØ polypropylene pipe.
- The condensate pipework must fall at least 50mm per metre towards the outlet and should take the shortest practicable route and not exceed 3 metres outside the building.
- The pipework must follow one of the options shown opposite:

a - Internal waste drainage system
b - Soil/vent stack
c - External drainage system
d - External condensate absorption point

- Use waterproof pipe insulation in exposed positions and for external pipework



IMPORTANT: Condensate pipework must not leak and must discharge into a condensate trap filled with water before the boiler is started to prevent the possibility of potentially harmful flue products escaping via the condensate route.

A - Condensate from the boiler condensate trap (supplied) which has a 75mm minimum water seal.
 B - Sink.
 C - 21.5mmØ polypropylene condensate pipe.
 D - Gully.
 E - Internal soil and vent stack.
 F - 300mm x 100mmØ sealed plastic tube.
 G - Ground level.
 H - Drainage holes 50mm from base of tube (12mmØ at 25mm centres) facing away from building.
 I - Limestone chippings.

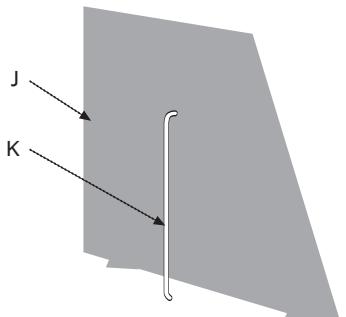
PRESSURE RELIEF PIPEWORK:

IMPORTANT: The pressure relief valve is a safety device for the boiler and if activated may discharge boiling water or steam through the relief valve drain pipe.

Care should be taken when siting the outlet pipe so that it does not cause an obstruction or discharge above a window, entrance or other public access where it could cause a hazard.

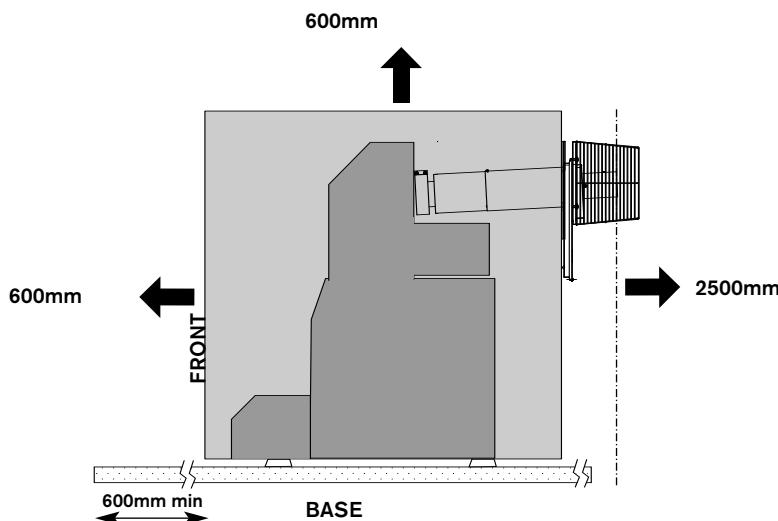
- The pressure relief drain pipe (K) should be at least 15mm diameter copper pipe and run downwards away from the boiler and discharge away from any electrics or other hazard, preferably to an external drain or soakaway.
- Pipe (K) should be finished with a partial bend, near the outlet to face the external wall (as shown) to help prevent freezing.

J - External boiler casing.
 K - Drain pipe.



BOILER LOCATION &

CLEARANCES



WARNING:

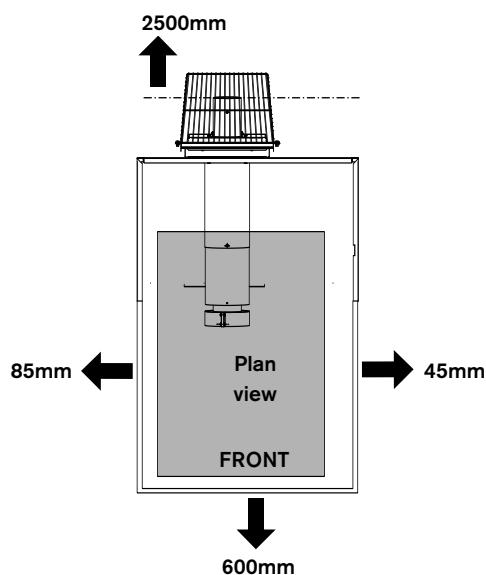
This appliance should not be installed where there is a potential for excessive ground water coverage.

This boiler is only suitable for installing externally at a suitable location onto a fixed permanent rigid surface capable of supporting the boiler weight.

There must be a sufficient hard standing around the appliance to allow for servicing.

The boiler must be installed on a flat level surface to ensure that condensate does not enter the primary heat exchanger.

Tarmac and wood hardstandings are not recommended.



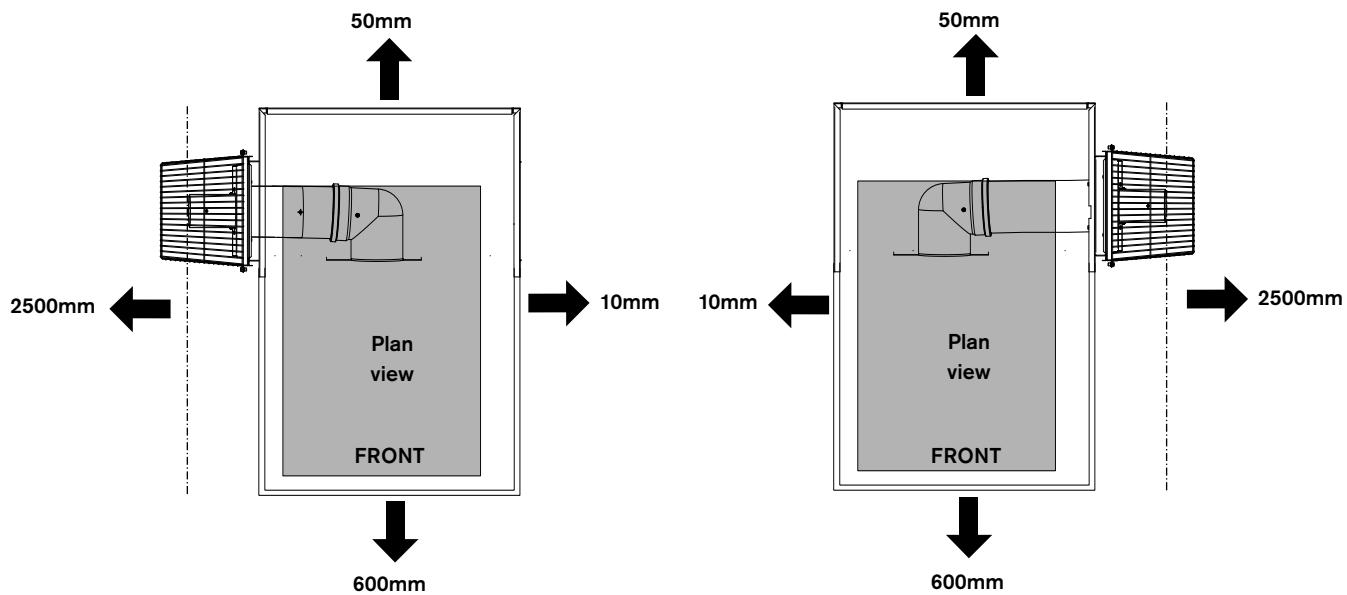
CLEARANCES: Min service & flue clearances

Above	600m
Front	600m

RH/LH clearance flue outlet on opposite side:	10mm
RH clearance flue outlet on rear:	45mm
LH clearance flue outlet on rear:	85mm

Rear clearance flue outlet on side:	50mm
Rear clearance flue outlet on rear:	2500mm

It is strongly recommended that the flue terminal faces away from walls to reduce the possibility of wetting occurring.



FLUE TERMINAL POSITIONS

Minimum dimensions of flue terminal positions for oil-fired appliances:

TERMINAL POSITION	B(H)
A ¹ Directly below an opening, air brick, opening windows, etc	600mm
B ¹ Horizontally to an opening, air brick, opening window, etc	600mm
C Below a plastic/painted gutter, drainage pipe or eaves if combustible material protected	75mm
D ² Below a plastic/painted gutter, drainage pipe or eaves without protection to combustible material	600mm
E From vertical sanitary pipework	300mm
F From an external or internal corner or from a surface or boundary alongside the terminal	300mm
G Above ground or balcony level	300mm*
H From a surface or boundary facing the terminal	2500mm**
I From a terminal facing the terminal	2500mm**
K Horizontally from a terminal on the same wall	750mm

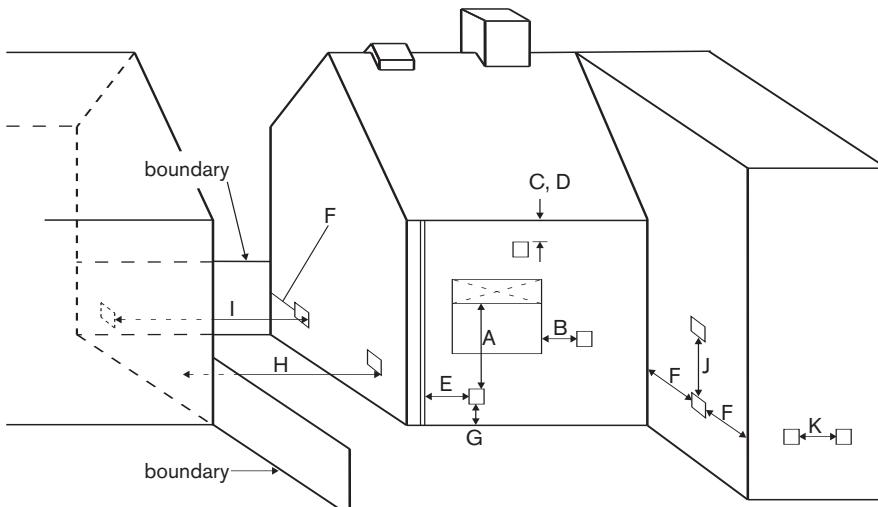
B(H) Balanced Horizontal flue

1 An opening means an openable element, such as an openable window, or a permanent opening such as a permanently open air vent.

Notwithstanding the dimensions above, a terminal should be at least 300mm from combustible material, e.g. a window frame.

2 A way of providing protection of combustible material would be to fit a heat shield at least 750mm wide.

- Flue terminals must be positioned to avoid combustion products entering into buildings.
- The flue must be fitted and terminated in accordance with the recommendations of BS5410.
- The flue must not cause an obstruction.
- Discharge from the flue outlet must not be a nuisance.
- Flue gases have a tendency to plume and in certain weather conditions a white plume of condensation will be discharged from the flue outlet which could be regarded as a nuisance, for example, near security lighting.
- There should be no restriction preventing the clearance of combustion products from the terminal.
- The air inlet/outlet duct and the terminal of the boiler must not be closer than 25mm to any combustible material. Detailed recommendations on protection of combustible materials are given in BS 5410:1
- A protective terminal guard must be fitted if the terminal is 2m or less above a surface where people have access. The guard must be spaced equally (minimum 50mm) around the flue and fixed with plated screws.

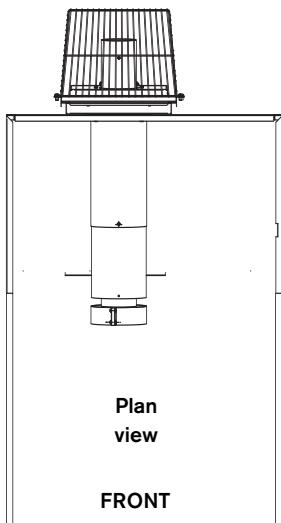


- The following additional guidelines (from part L Exceptions Guidance Document) are recommended when determining the flue outlet position:
 - Avoid discharging flue gases into car ports or narrow passageways.
 - *Minimum distance of the flue terminal from above ground is 2100mm where directed to a public footpath, private access route or a frequently used area and 2500mm from a car parking area.
 - **Minimum distance of the flue terminal to a facing wall, fence, building or property boundary is 2500mm.

BALANCED FLUE OPTIONS

REAR FLUE OUTLET

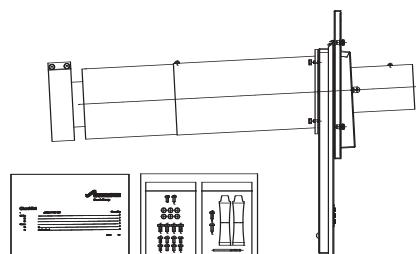
A + C



- The balanced flue is fitted to the rear or either side of the cabinet.

IMPORTANT:

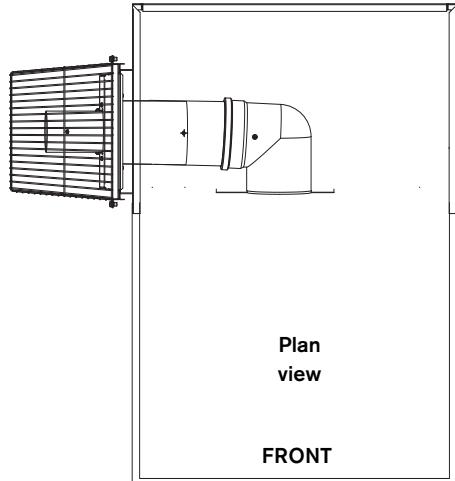
It is strongly recommended that the flue terminal faces away from walls to minimise the occurrence of wetting.



A - External horizontal flue kit
Part No. 7 716 190 052

RIGHT HAND FLUE OUTLET

A + B + C



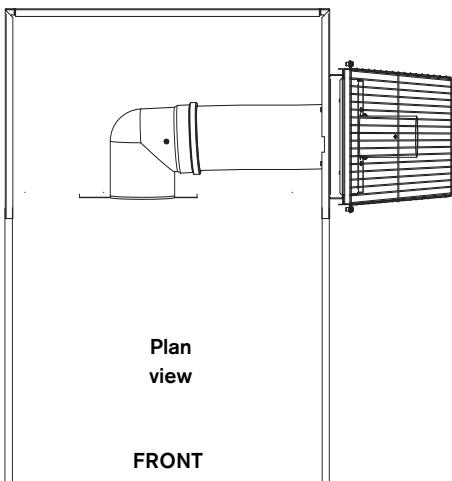
B - 90° inline elbow 80/125mm
Part No. 7 716 190 034



C - Terminal guard (not included in flue kit)
Part No. 7 716 190 050

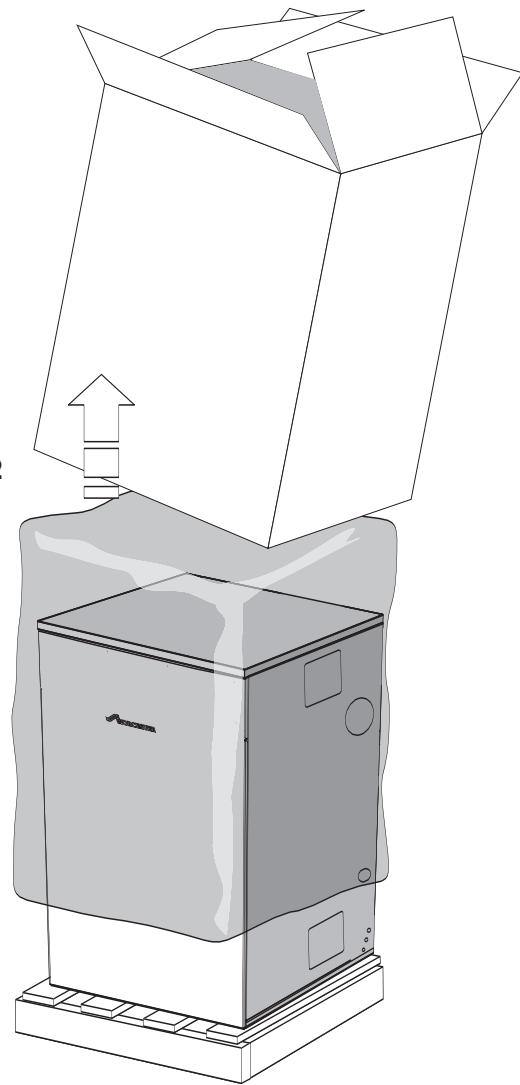
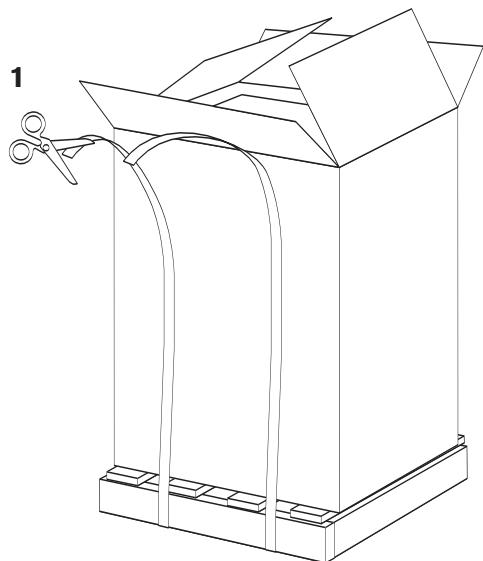
LEFT HAND FLUE OUTLET

A + B + C



IMPORTANT: All the previous Pre-Installation sections must be read and requirements met before starting boiler or flue installation.

UNPACKING THE BOILER



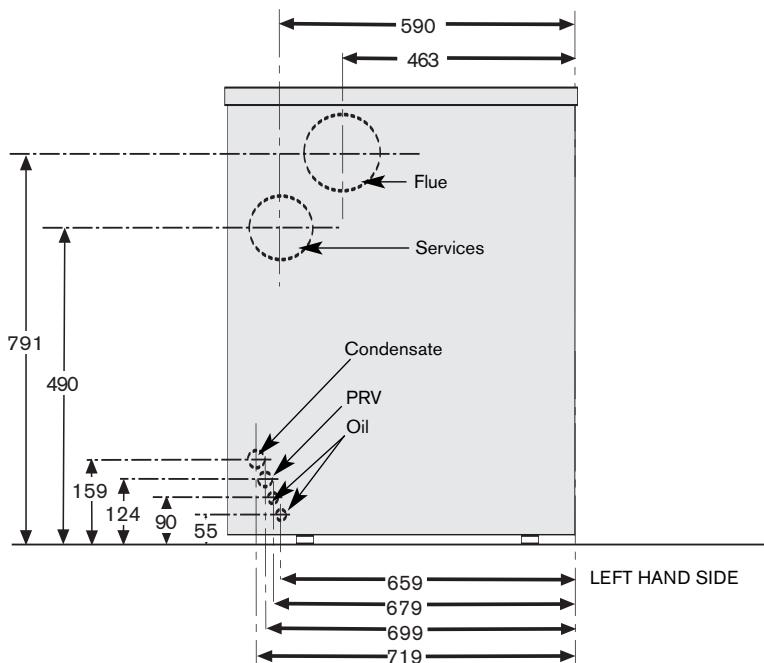
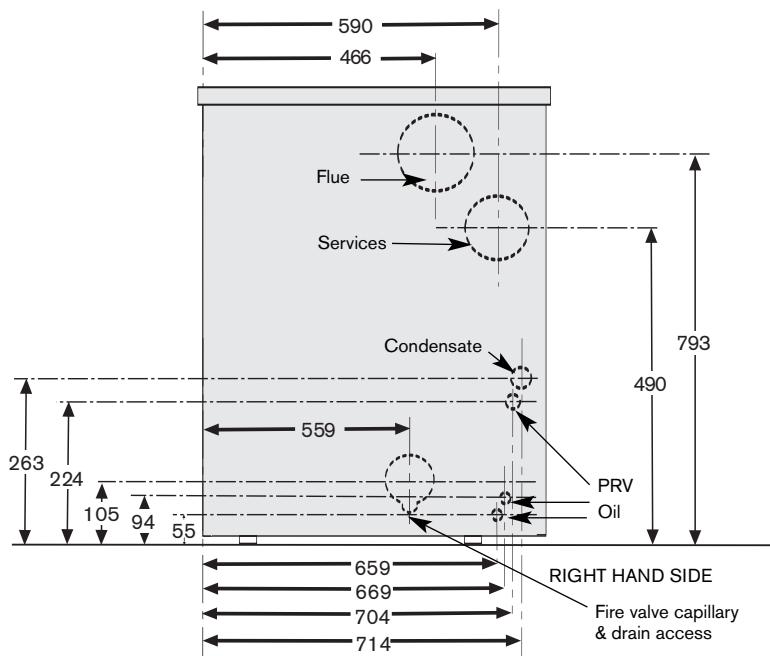
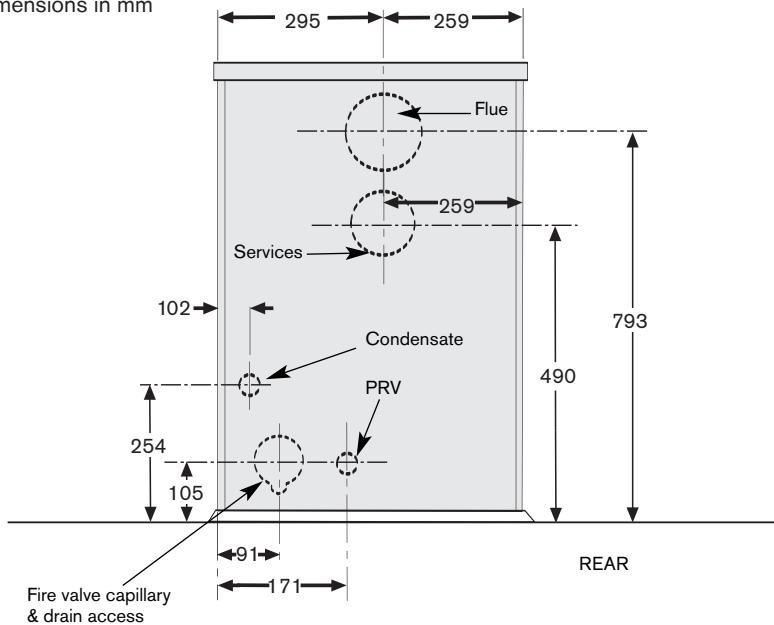
LIFTING AND CARRYING PRECAUTIONS:

- Lift only a manageable weight, or ask for help.
- When lifting or putting things down, bend the knees, and keep the back straight and feet apart.
- Do not lift and twist at the same time.
- Lift and carry objects close to the body.
- Wear protective clothing and gloves to protect from any sharp edges.

Unpacking:

It is advised that at least two or more persons are involved in the transfer of the packaged boiler from the van to the point of delivery.

- 1 ▶ Once the packaged boiler has been delivered, the outer carton is removed first. Care should be taken when releasing the straps. If a sharp implement is used make sure the outer carton is not pierced and that the implement is used in such a way so that it may not cause personal injury. All sharp objects must be covered or the blade retracted after use and put away in a safe place.
- 2 ▶ Lift carton up and away from the boiler.
▶ Remove the plastic bag from the boiler and place safely aside.



CAUTION: Ensure there are no pipes, electric cables, damp proof courses or other hazards before drilling.

SAFETY:

All relevant safety precautions must be undertaken. Protective clothing, footwear, gloves and safety goggles must be worn as appropriate.

PIPEWORK CONNECTIONS:

Flow/open vent 1" BSP 12/18, 18/25.
1 1/4" BSP 25/32.

Primary drain/cold feed 3/4" Ø BSP.

Return 22mm Ø copper 12/18, 18/25.
28mm Ø copper on 25/32 model.

Flue outlet 80/125mm Ø.

Condensate outlet 21.5mm Ø.

NOTE: For servicing purposes, keep the condensate and pressure relief discharge pipes away from components and pipework connections.

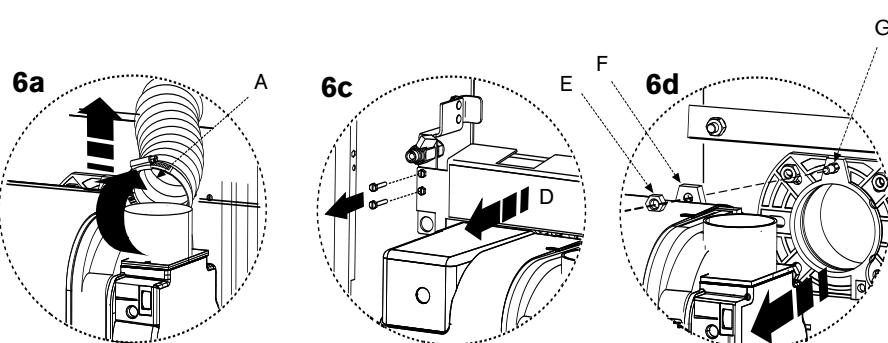
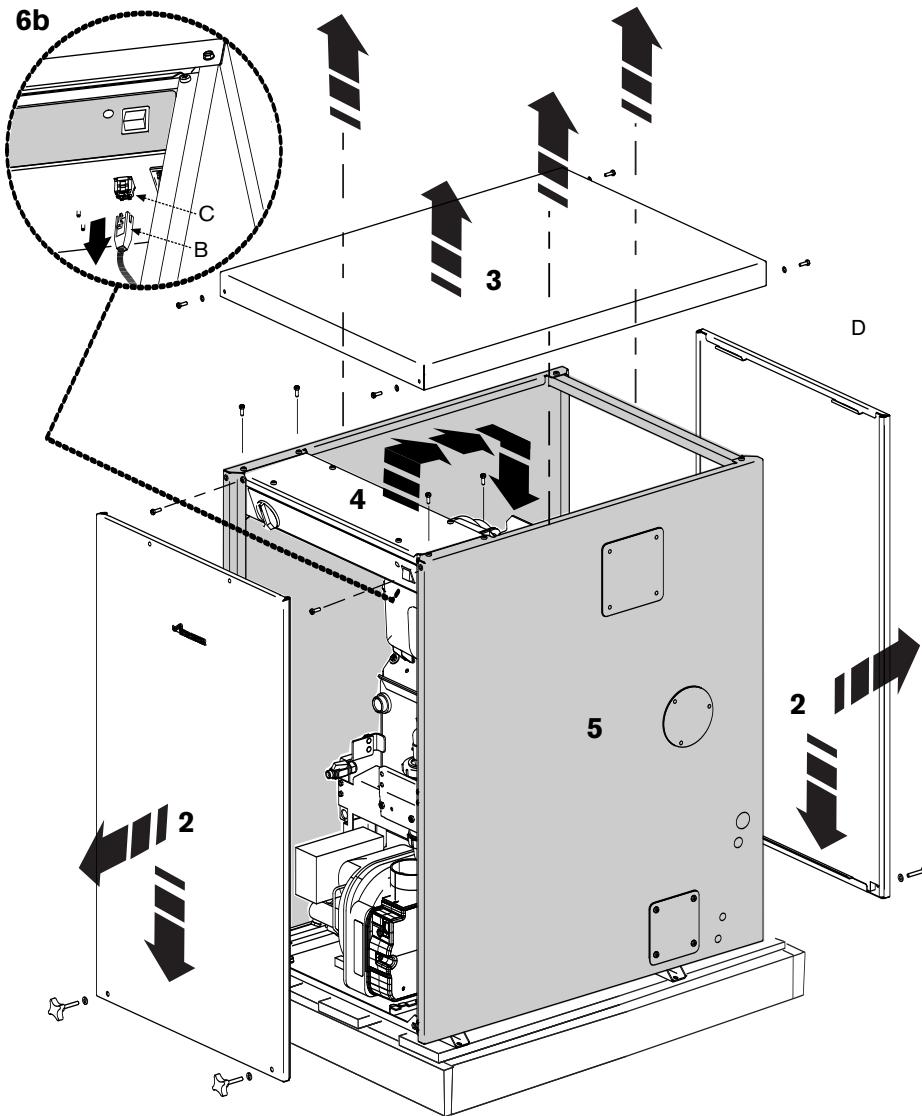
WARNING: THIS APPLIANCE IS SERVICED AND REPAIRED EXTERNALLY.
EXTERNAL EQUIPMENT OPERATED AT 230V SHOULD NOT BE INSTALLED, SERVICED OR REPAIRED UNDER ADVERSE WEATHER CONDITIONS.

THIS APPLIANCE IS INSTALLED AND SERVICE EXTERNALLY TO THE PROPERTY, BUT THE ENGINEER MUST HAVE ACCESS TO THE INSIDE OF THE PROPERTY WHEN INSTALLING OR SERVICING THE APPLIANCE.

BOILER INSTALLATION

Note: The cabinet is not load bearing it only provides weather protection for the boiler inside.

- 1 ▶ Mark position of the 100mm services duct on the exterior wall and make a hole through.
- 2 ▶ Remove the screws from the bottom of the front and rear panels and pull the panels out and down to remove. Store safely away from the installation point.
- 3 ▶ Remove the screws from the top panel and lift up to remove, store safely away from the installation point.
- 4 ▶ Remove the screws securing the control box to the side panels and carefully rest the control box on top of the heat exchanger taking care not to snag or kink the capillaries.
- 5 ▶ Remove the screws securing the side panels to the base panel and lift the side panels off complete with the rear support bar (shaded grey) and carefully stand the panels away from the installation point.
- 6a ▶ Loosen the flexible air duct clamp (A) and remove the air duct from the burner.
- 6b ▶ Depress the locking ears to unplug the burner lead (B) from the control box (C).
- 6c ▶ Undo the two screws securing the deflector plate (D) and remove the plate.
- 6d ▶ Undo and remove the retaining nut (E) on top of the burner. The burner mounting (F) can now be eased off the lug (G) on the burner collar to remove the burner from the heat exchanger. Store the burner and retaining nut safely away from the boiler.
- 7 ▶ Remove the screws securing the base panel to the transit pallet and lift the boiler off the pallet and into its installation position taking care not to scrape the base panel across the hard standing. **Do not attempt to lift and position the boiler on your own. Do not use the copper pipes to move the boiler.**
 - ▶ Fasten the base to the hard standing using the holes provided. Care should be taken to ensure that the base is level.
- 8 ▶ Refit the side panels and rear support bar and screw the side panels to the baseplate and boiler.
 - ▶ Refit the control box taking care not to kink the capillary tubes.
 - ▶ Measure the 100mmØ services duct to give at least 10mm inside the casing and to finish flush with the interior wall surface, cut to size and fit the duct. Fit the 100mm sealing ring where the duct enters the casing and seal the joint to the exterior wall and inside the cabinet with a suitable sealant.

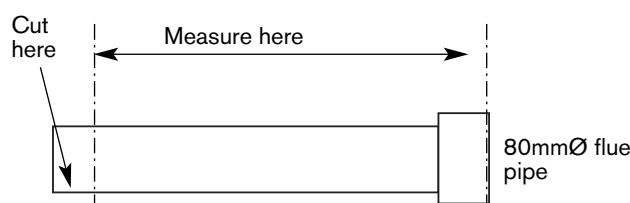
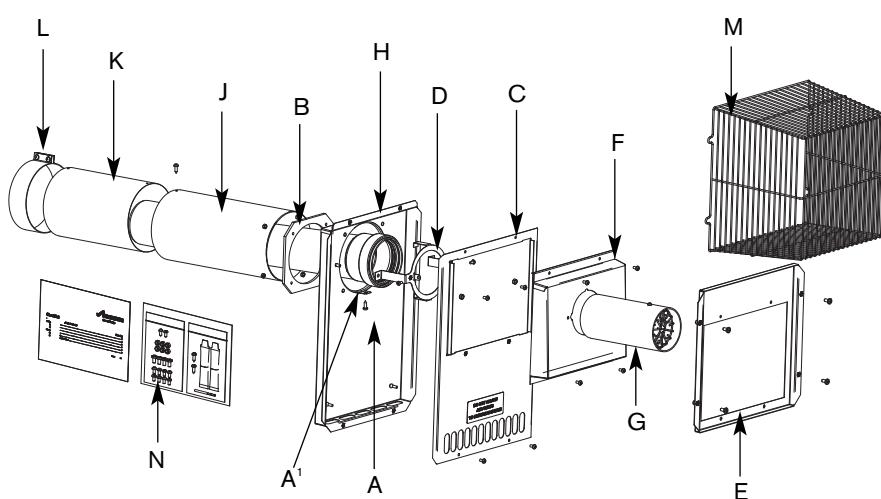


IMPORTANT: REFER TO FLUE INSTALLATION MANUAL FOR MORE INFORMATION.

INSTALLATION

- A - Air box rear.
- A¹ - Tag.
- B - Air box rear gasket.
- C - Air box front.
- D - Retaining bracket.
- E - Terminal guard support.
- F - Air inlet cover.
- G - Flue terminal.
- H - 80mmØ Flue pipe.
- J - Air inlet outer section.
- K - Air inlet inner section.
- L - Inlet clamp.
- M - Stainless steel terminal guard (not supplied, Part No. 7 716 190 050).
- N - Accessory pack.

Note: To use the right hand or left hand flue options a 90° swept flue elbow is required, (Part No. 7 716 190 034).



FLUE INSTALLATION

INSTALLATION NOTES:

- ▶ Ensure all the seals are in good condition and seated properly.
- ▶ To ease assembly of flue components, grease seals lightly with the solvent free grease supplied.
- ▶ A terminal guard must be fitted if the terminal is 2m or less above a surface where people have access.

All flue options:

- 1 ▶ Lightly grease the flue cowl seal with the solvent free grease supplied.
- 2 ▶ Remove the panel blanking plate from the relevant flue aperture (if necessary) and refit the blanking plate in the unused aperture.
- 3 ▶ Carefully remove the insulation from the aperture in the cabinet panel the flue is to pass through.
- 4 ▶ Fit the gasket (B) to the back of the air box rear (A) and bolt the air box rear to the cabinet panel with the M5 nuts provided.
- 5 ▶ Carefully mark and cut the 80mmØ flue pipe (H) to the length given in the chart below. Make sure the cut is square to the tube, remove any burrs and chamfer the outside edge to assist in insertion into the seal.

Rear flue outlet:	470mm*
Left hand flue outlet:	235mm**
Right hand flue outlet:	270mm

* For the right hand flue option reduce the air inlet outer section by 100mm, carefully cut square and remove burrs after cutting.

** The air inlet outer section is not needed for this outlet position.

Rear flue options:

- 6.0 ▶ Fit the air inlet inner section (K) to the boiler flue cowl and secure with the clamp (L).
- 6.1 ▶ Fit the air inlet outer section (J) over the inner section (K), push through the panel so that the end of the tube is flush with the tag (A1) on the air box rear (A) and secure the tag with one of the longer self tapping screws provided.
- 6.2 ▶ Carefully drill the inner section (K) with the drill bit and secure to the outer section (J) with one of the longer self tapping screws provided.

FLUE INSTALLATION

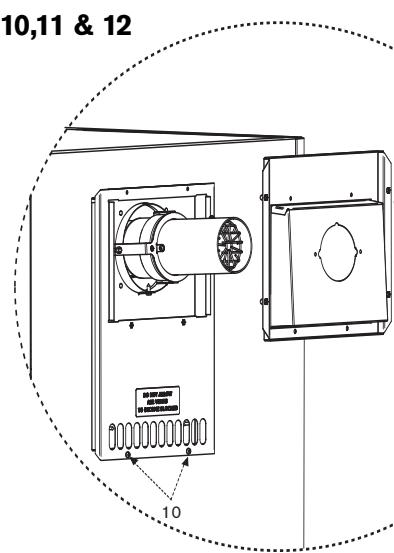
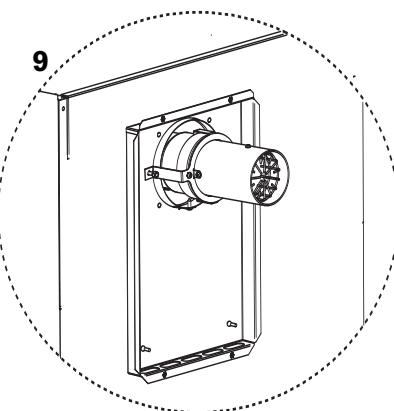
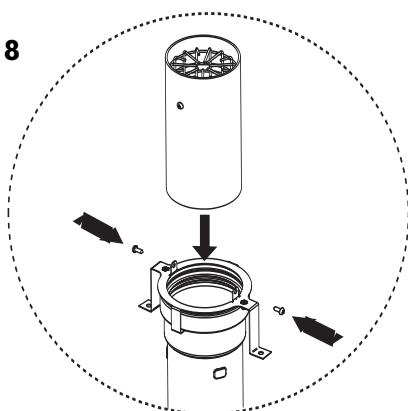
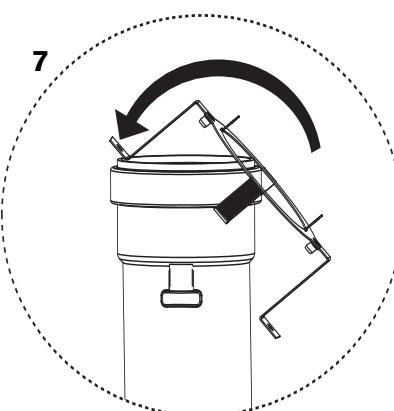
Side flue options:

- 6.0 ▶ Lightly grease the 90° elbow seals with the solvent free grease supplied and fit the flue elbow to the flue cowl with the clamp (L) in place.
- 6.1 ▶ Fit the air inlet inner section (K) to the elbow.
- 6.2 ▶ Fit the air inlet outer section (J, not required if flueing to the right hand side) over the inner section (K), push through the panel so that the end of the tube is flush with the tag (A1) on the air box rear with one of the longer self tapping screws provided.
- 6.3 ▶ Right hand flue option: Fit the shortened air inlet outersection (J) over the inner section (B), push through the panel so that the end of the tube is flush with the tag (D1) on the air box rear (D) and secure to the tag with one of the longer self tapping screws provided.
- 6.4 ▶ Right hand flue option: Carefully drill the air inlet inner section (B) with the drill bit and secure to the outer section (C) with one of the longer self tapping screws provided.
- 6.5 ▶ Tighten the clamp (A) whilst maintaining the correct alignment of the elbow to the air inlet sections.

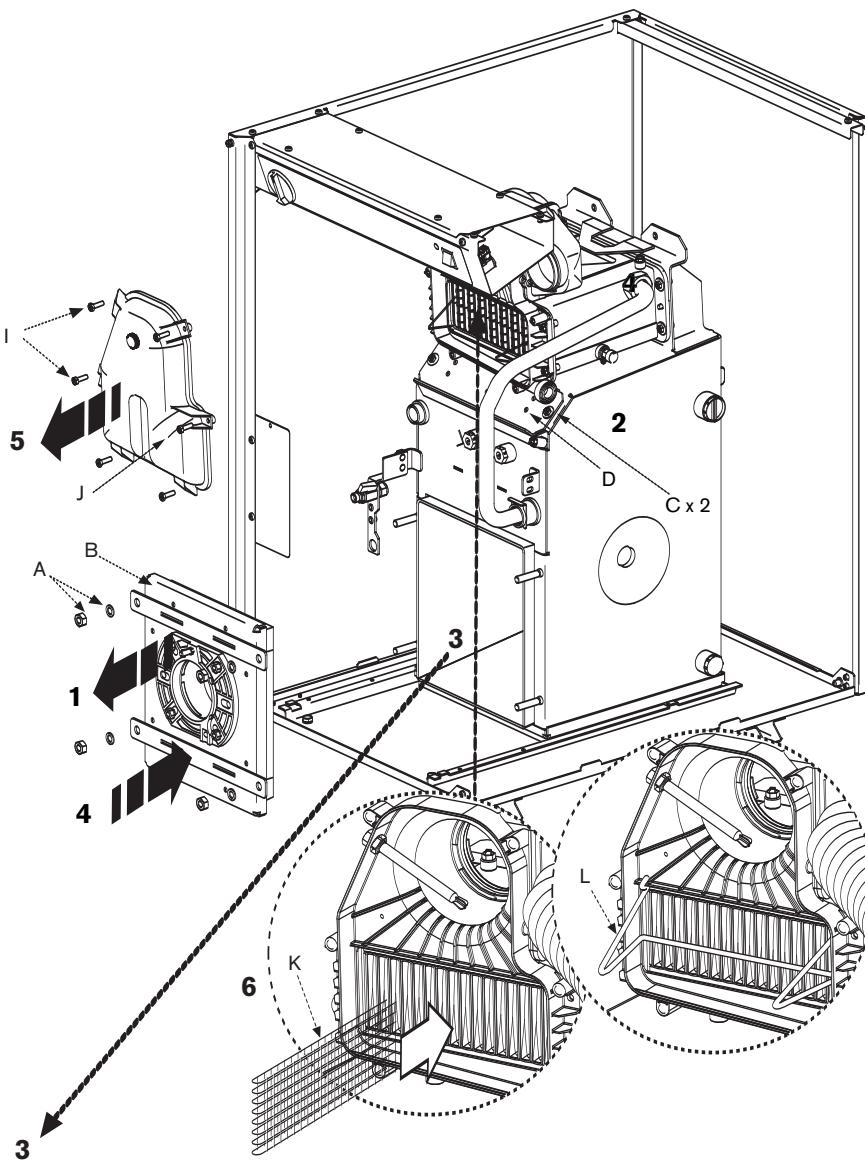
All flue options:

- 7 ▶ Fit the retaining bracket (D) to the shortened 80mmØ flue pipe (H) and lightly grease the flue pipe seal with the grease provided.
- 8 ▶ Push the flue terminal (G), fully into the flue pipe through the bracket with the grill retaining screw on the terminal at 90° to the tags of the bracket. Drill two holes through the bracket tags and secure the terminal to the bracket with the two shorter self tapping screws.
- 9 ▶ Pass the flue pipe through the air box rear (A) and into the cowl/elbow with the terminal grill retaining screw at the top then secure the bracket (D) to the air box rear with 2 of the M5 nuts.
- 10 ▶ Fit the air box front (C) and secure to the flue pipe bracket with 2 of the screws provided.
- 11 ▶ Fit the air inlet cover (F) and secure to the flue pipe bracket with 2 of the screws provided.
- 12 ▶ Fit the terminal guard support (E) and secure with the screws provided.
- 13 ▶ Fit the terminal guard (M, not supplied) and secure with the screws provided.

N.B. There will be one screw spare with the left hand outlet position.

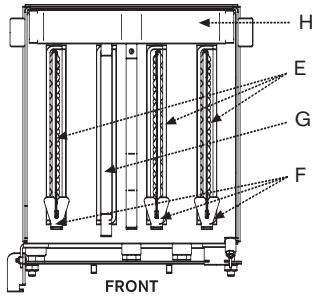
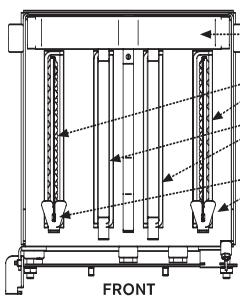


COMBUSTION CHAMBER

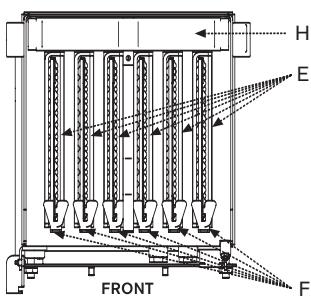


12/18
Plan sectional view

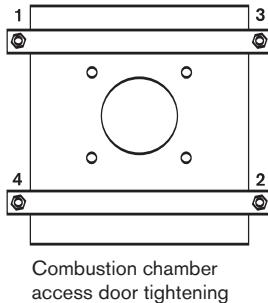
18/25
Plan sectional view



25/32
Plan sectional view



IMPORTANT when refitting
the combustion chamber
access door (4)

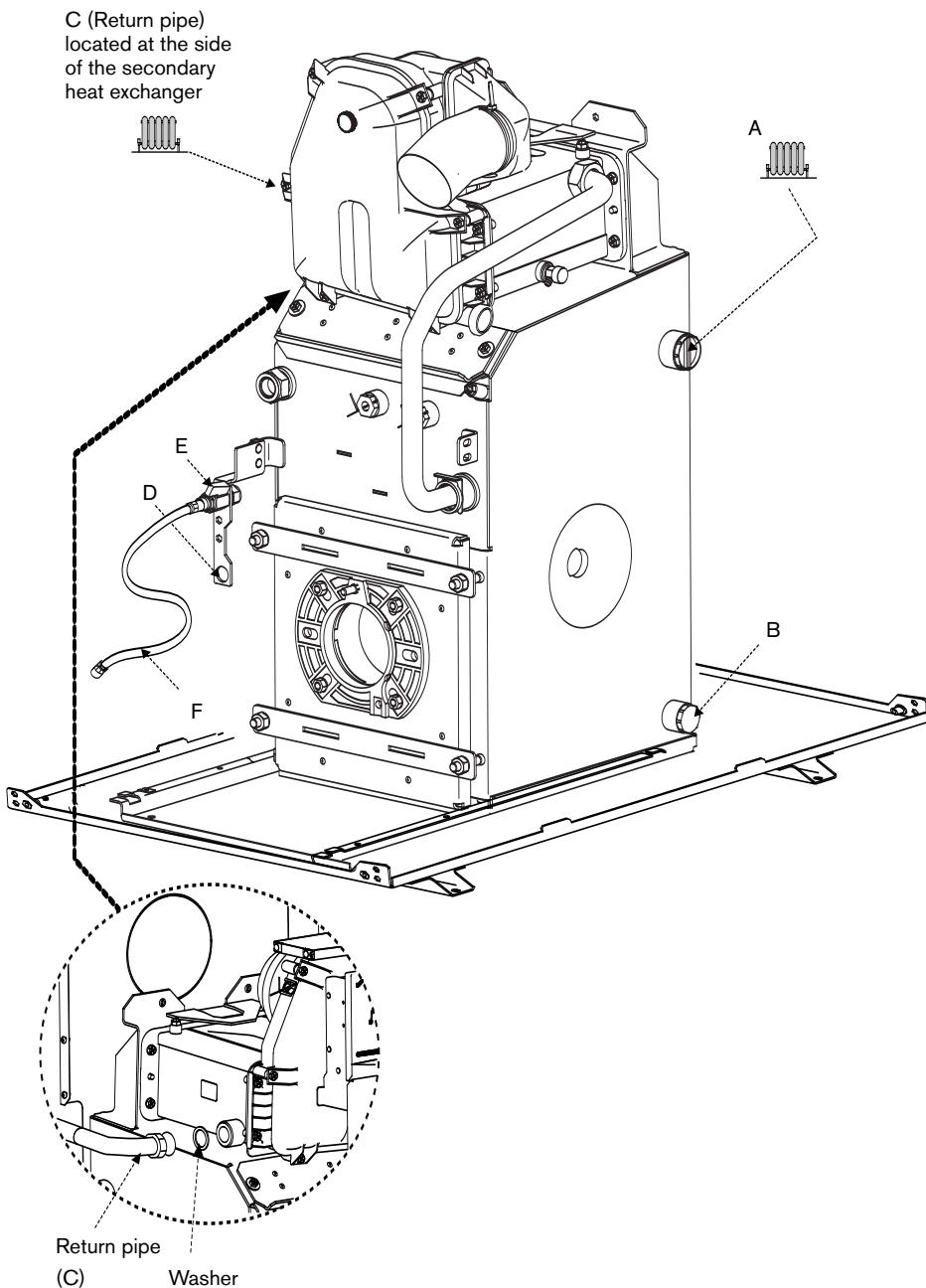


Combustion chamber:

- 1 ▶ Release retaining nuts and washers (A).
▶ Remove combustion chamber access door (B).
- 2 ▶ Release screws (C) on either side and remove upper access door (D).
- 3 ▶ Ensure baffles (E) and baffle retainers (F), restrictor plates (G) and acoustic insulation insert (H) are correctly fitted for the boiler model as shown in the plan view opposite. **For further information refer to the Baffle Arrangement Diagram on the last page at the back of this manual.**
▶ Refit the upper access door (D) and secure with screws (C).
- 4 ▶ Secure combustion chamber access door with nuts and washers (A). Tighten until door is firmly secured using the sequence below. Do not overtighten the nuts.
- 5 ▶ Unscrew screws (I) and remove flue manifold access cover (J).
- 6 ▶ Check that all the baffles (K) and baffle retainer (L) are correctly fitted to the secondary heat exchanger.

CAUTION: ISOLATE THE OIL & WATER MAINS SUPPLY BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS.

PIPEWORK CONNECTIONS



- A - Flow/open vent 1" BSP on 12/18, 18/25 (1 1/4" BSP on 25/32 models)
- B - Primary drain/feed 3/4" BSP
- C - Return 22mm Ø copper (28mm Ø on 25/32 models)
- D - Fixing point for optional return oil pipe.
- E - Oil isolating valve (10mmØ)
- F - Flexible oil pipe

WATER CONNECTIONS:

- All service pipes into the property must pass through the services duct.
- Insulate all the system/supply pipes and where the pipes pass through the duct use at least 22mm insulation around the pipes.
- Remove the transit bungs from the pipework connections on the boiler.

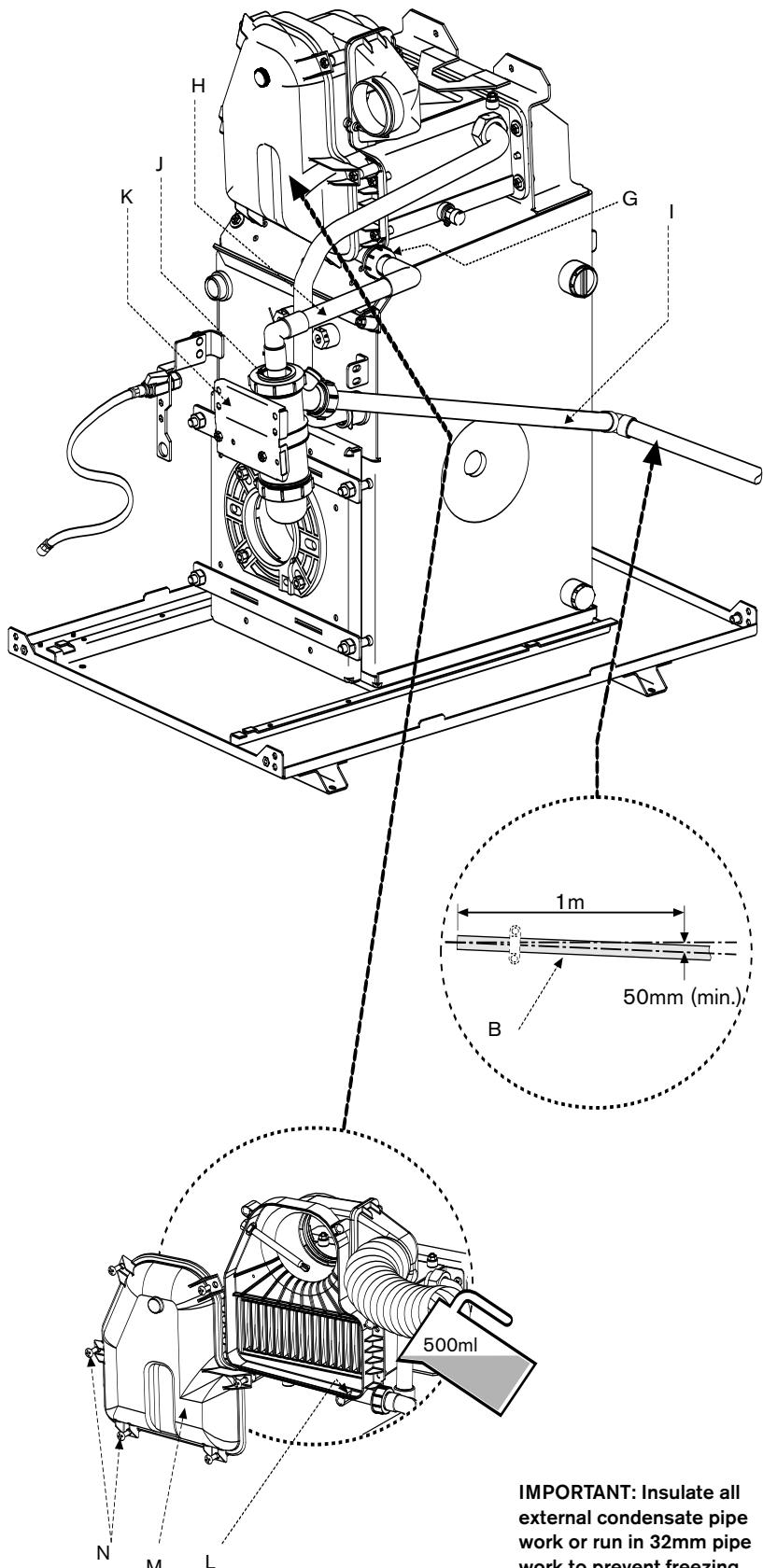
NOTE: that surplus water may be present due to factory testing.

- Ensure all pipework is clean.
- Align water pipework through the 100mm Ø duct and connect, ensuring that the control box fits correctly before permanently connecting the pipework.
- Check that all unused sockets have been capped.

OIL SUPPLY CONNECTIONS:

NOTE: Oil filters and de-aeration devices are not to be fitted within the casing and the fire valve body must be at least 1 metre from the external casing.

- Route the oil supply pipe through the appropriate casing hole as required and connect to the isolating valve (E) and ensure the valve is closed.
- Connect the flexible oil pipe (F) to the isolating valve (E).
- Pass the fire valve sensor through the most appropriate casing hole and locate the capillary in the cut out at the bottom of the hole.
- Clip the sensor into the clip provided at the rear of the control box.
- Rotate the cover plate and seal so it does not cover the capillary, then secure with the screws provided.



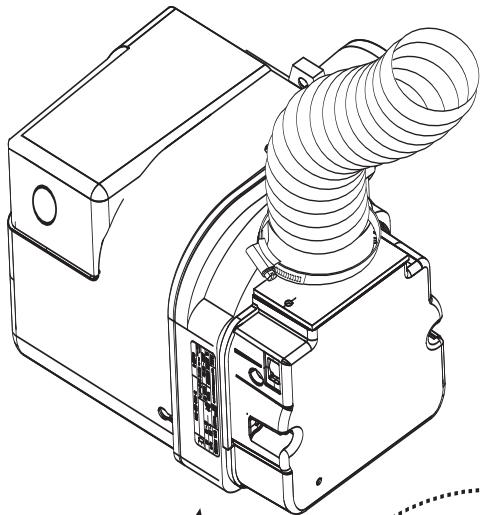
IMPORTANT: Insulate all external condensate pipe work or run in 32mm pipe work to prevent freezing.

- G - Flue manifold condensate outlet
- H - Condensate outlet (21.5mmØ) - supplied
- I - Condensate pipe - not supplied
- J - Condensate trap
- K - Condensate trap fixing bracket - supplied

CONDENSATE CONNECTION:

- The condensate trap (J) must be installed onto the bracket (K) supplied.
- Measure condensate pipe (H) mark and cut square to length required.
- Fit sealing washer inside condensate pipe nut and connect to the flue manifold outlet (G).
- Connect 21.5mm polypropylene pipe (I) (not supplied) condensate trap (J) before terminating to waste.
- Ensure that the condensate pipe runs away from the boiler at a constant fall of 50mm (min.) for every metre.
- Carefully pour 500ml of water into the condensate collection (L) to fill condensate trap.
- Check the water is running away and the condensate pipework joints are water tight.
- Check the flue manifold seal is undamaged and seated correctly.
- Refit flue manifold access cover (M) and secure with screws (N).

IMPORTANT: The condensate trap must be correctly filled to prevent the possibility of potentially harmful flue products escaping via the condensate pipework.



OIL BURNER & PUMP

CAUTION: ISOLATE THE OIL & WATER MAINS SUPPLY BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS.

OIL BURNER:

- 1 ▶ Check the nozzle (A) and electrode (B) settings are correct as shown opposite.
- ▶ Ensure nozzle (A) is aligned centrally within the combustion head (C).
- ▶ Inspect for any visible defects.

2 IMPORTANT: Before removing or fitting a nozzle (A), loosen screw (D) and move the electrodes (B) forward.

After refitting check that the electrode gaps are correct, as shown opposite.

NOTE: the 12/18 model has a brass deflection washer and locating circlip behind the nozzle. These must be in place for the correct operation of the burner.

IMPORTANT: Whenever replacing the combustion head, ensure that the photocell is lined up with the sight hole.

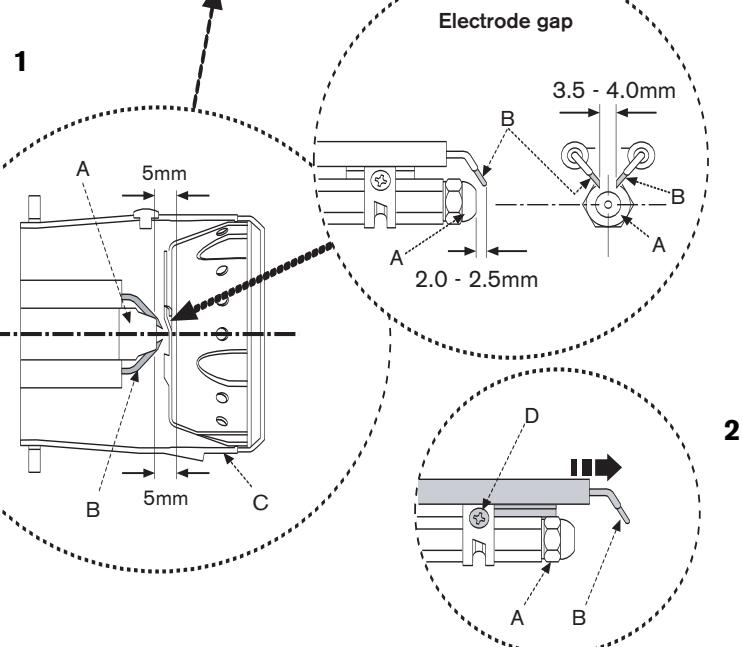
OIL PUMP:

Connecting the oil pump for a single pipe system:

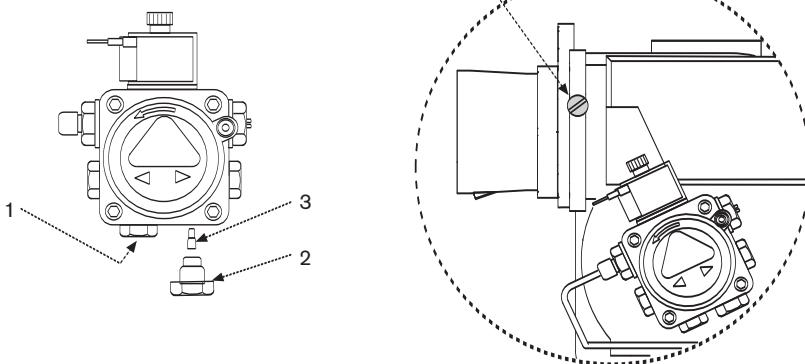
- ▶ The pump is factory set for single pipe operation with the flexible oil pipe fitted.
- ▶ Check connections before use.

Converting the oil pump for a double pipe system:

- 1 ▶ Check the inlet pipe connection (1).
- ▶ Unscrew return plug (2).
- ▶ Screw in by-pass screw (3).
- 2 ▶ Connect the flexible oil pipe **return** hose (not supplied) to the oil pump and return pipe fixing point (D on page 23) and tighten to secure.

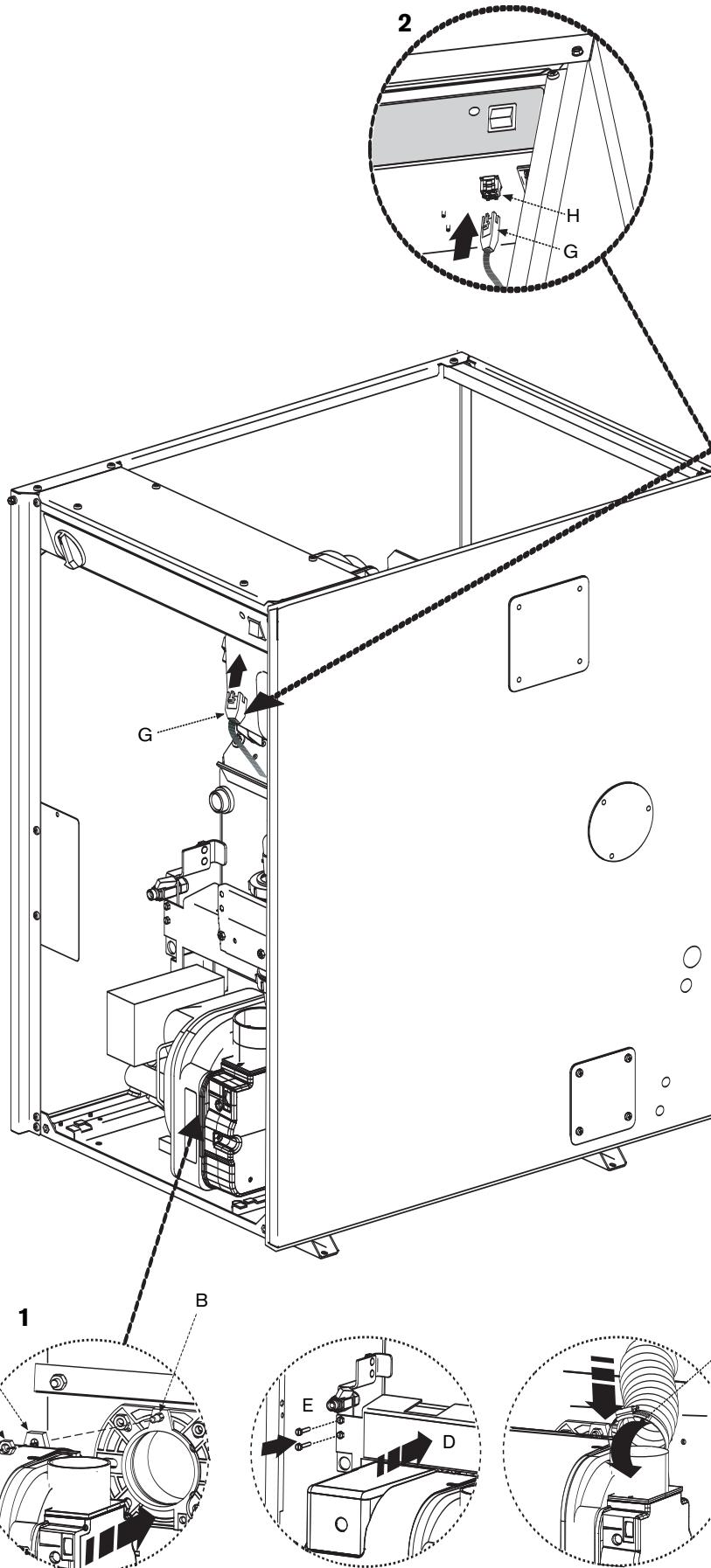


RIELLO RDB OIL PUMP



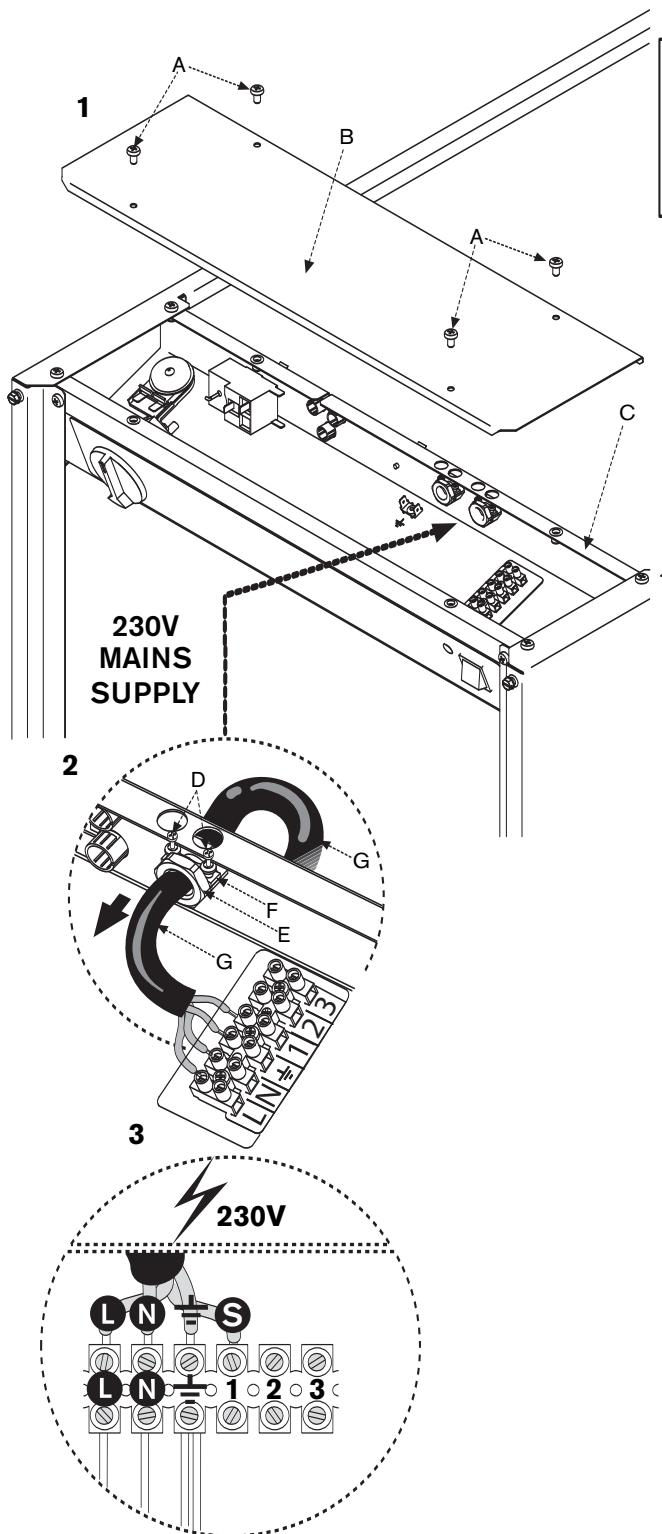
(on 12/18 model only)
Brass air deflector washer

Locating circlip



- 1 Align burner combustion head into boiler collar.
- 2 Locate the burner retainer (A) over the threaded lug on the collar (B), push the burner firmly onto the flange and secure in place with the retaining nut (C). Tighten sufficiently but do not overtighten.
- 3 Check that the burner is seated correctly on its mounting flange and that the oil pipe/s are not trapped in front of or underneath the burner.
- 4 Refit the deflector plate (D) and secure with screws (E). Ensure that the flexible oil pipe/s are not positioned between the deflector plate and the combustion chamber door.
- 5 Attach air duct pipe and tighten clip (F) to secure to the burner air intake.
- 6 Plug burner lead (G) into control box (H).

ELECTRICS



	= EARTH
	= PERMANENT LIVE
	= NEUTRAL
	= SWITCHED LIVE

DANGER - 230V:
ISOLATE THE MAINS ELECTRICITY
SUPPLY BEFORE STARTING ANY
WORK AND OBSERVE ALL RELEVANT
SAFETY PRECAUTIONS.

**IMPORTANT: OBSERVE ELECTRONIC
STATIC DISCHARGE PRECAUTIONS.
DO NOT TOUCH THE PCB CIRCUITS.**

**WARNING: EXTERNAL EQUIPMENT
OPERATED AT 230 VOLTS SHOULD NOT
BE SERVICED OR REPAIRED UNDER
ADVERSE WEATHER CONDITIONS.**

Access to 230V connections:

- 1 ▶ Release screws (A) and remove cover panel (B) from control box (C).
- 2 ▶ Release screws (D) from cable clamp (E).
▶ Pull inner clamp part (F) outwards.
▶ Feed sufficient power cable (G) through the cable clamp (E) and secure grip with screws (D).
▶ Separate wires from cable end and strip to 6mm.

230V connections (terminal block X1):

- 3 ▶ Connect the permanent LIVE wire (Brown) to terminal L.
- ▶ Connect the switched LIVE wire (demand or boiler feed) to terminal 1.
- ▶ Connect NEUTRAL wire (Blue) to terminal N.
- ▶ Connect EARTH wire (Green/Yellow) to the connector .

Route the power cable down the side panel through the service duct to the internal property connection point avoiding any potentially hot surfaces.

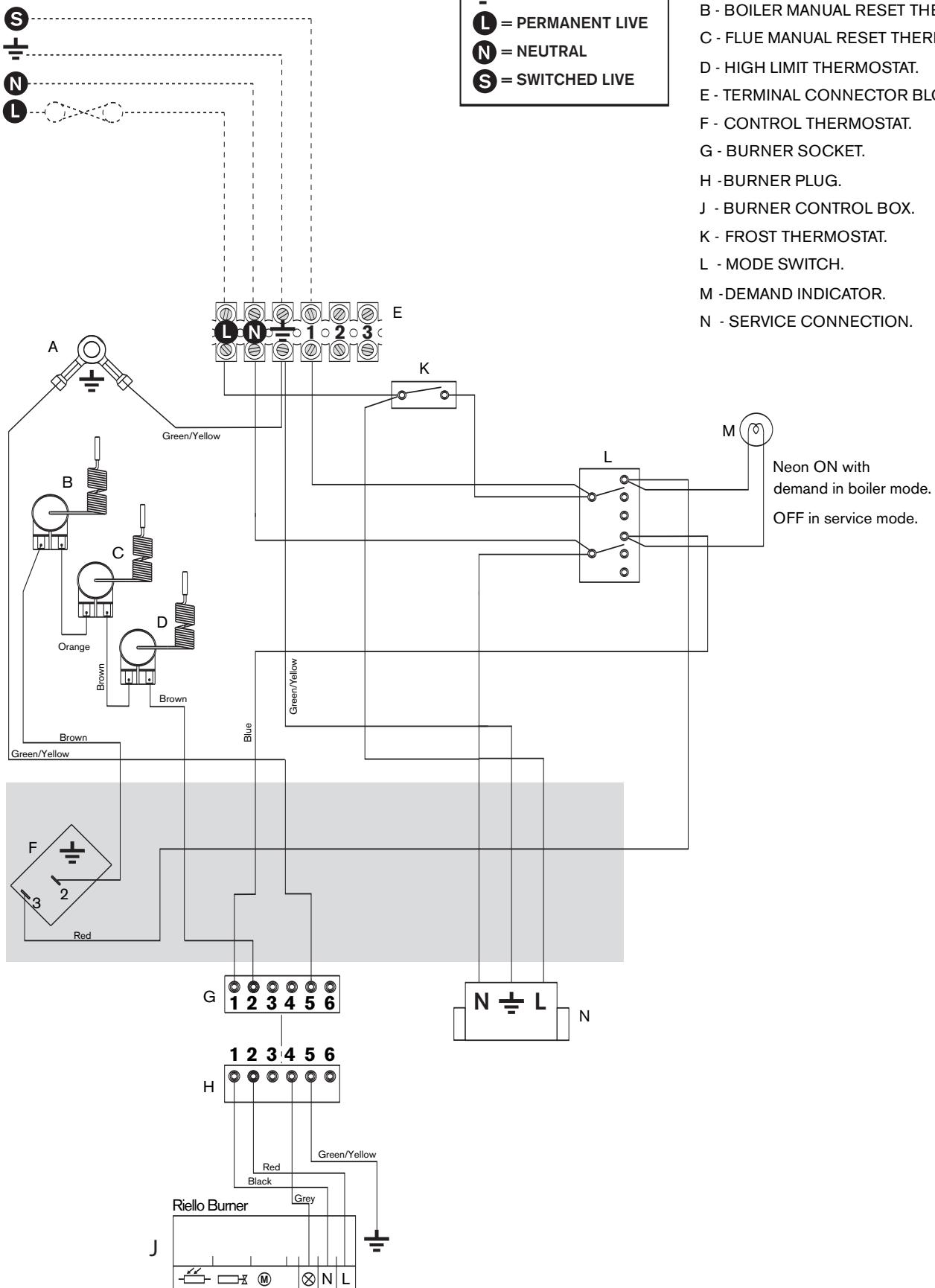
Any external device connected to the boiler must take its power supply from the boiler supply only and must NOT have a separate supply.

NOTE: A frost thermostat is fitted as standard to the external appliance to provide frost protection.

230V STANDARD WIRING DIAGRAM:

Key to components:

-  = EARTH
-  = PERMANENT LIVE
-  = NEUTRAL
-  = SWITCHED LIVE



ELECTRICS

REMOTE 2 OR 3 PORT VALVE CONTROL SET USING REMOTE PROGRAMMER:

Key to components:

O - REMOTE JUNCTION BOX (10-way) to connect the following (refer to manufacturers instructions):

- Mains wiring 230V 50Hz, fed via a circuit breaker incorporating earth leakage protection.
- Hot water tank thermostat.
- Room thermostat.
- System water valves.
- Circulating pump.
- External programmer.

E - TERMINAL CONNECTOR BLOCK.

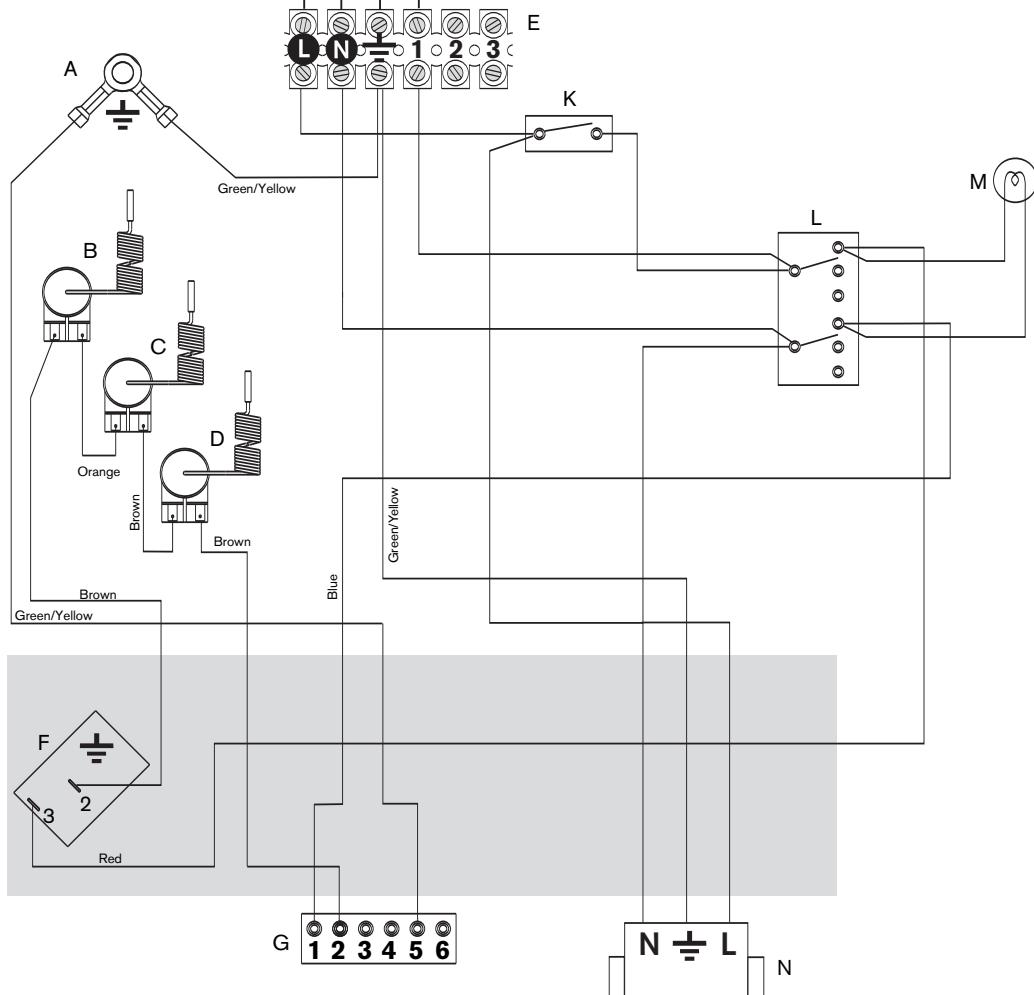
Remote (10 way) junction box (K) requirements:

- The junction box (K) must be a terminal block type, current rated to at least 5 amps.
- A 5 amp fuse must be fitted to the mains supply.
- The junction box (K) must be fitted externally to the boiler.

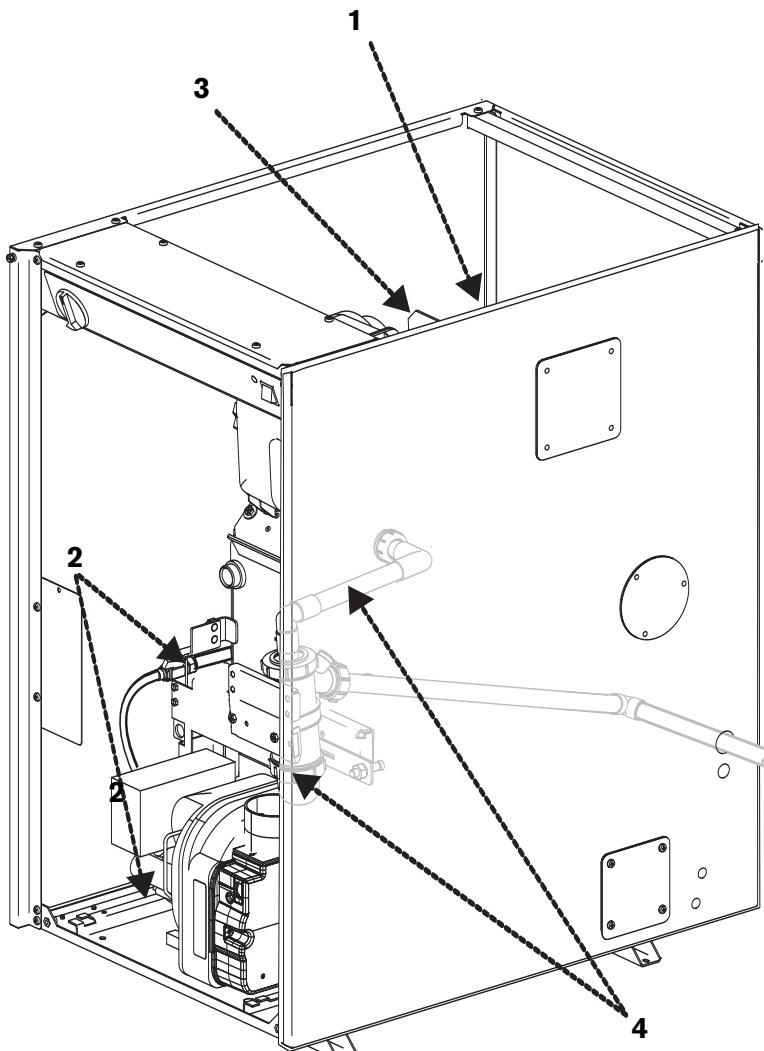
If an additional frost thermostat is required, it should be connected to the remote junction box.

OUTSIDE BOILER

INSIDE BOILER



CAUTION: ISOLATE THE MAINS SUPPLIES BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS.



- 1 ▶ Check that the service and water pipes are connected correctly.
- ▶ Check that all unused sockets are capped off.
- 2 ▶ Check that the oil supply is 28 sec kerosene and that the pipework is connected correctly to the oil pump.
- ▶ Turn on the main oil supply valve at the tank, check the oil supply pipework and connections. Rectify any leaks.
- 3 ▶ Check the flue is correctly fitted and the connections are secure.
- 4 ▶ Check the condensate pipework is correctly fitted and connected.
- ▶ Check the condensate trap is filled with water.

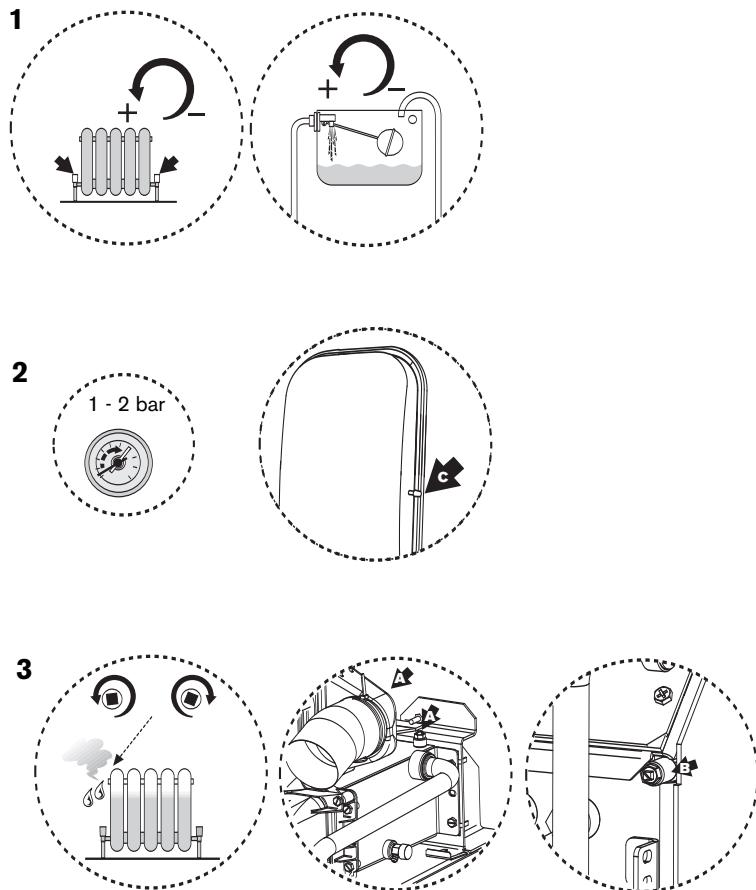
NOTE: The cabinet is not load bearing, it only provides weather protection for the boiler inside.

IMPORTANT: If the boiler is not to be commissioned immediately then:

After successfully completing all of the checks and any rectification work, close the water valves, shut off the oil supply and electrically isolate the boiler.

Complete the installation part of the Guarantee Registration Card, and complete CD10 or its equivalent, to inform the LABC of the installation.

FILLING THE SYSTEM



- 1 ▶ Open all system and radiator valves.
▶ Turn on the water main stop cock.
▶ Open vented systems only:
▶ Turn on the water to the system feed and expansion cistern and allow the system to fill.
- 2 ▶ Sealed systems only:
▶ Check and if required, adjust the expansion vessel pressure using the Schraeder type valve (C).
▶ Fill the system to between 1 and 2 bar pressure via a WRAS approved filling link.
▶ Monitor the pressure gauge during venting and repressurise if required.
- 3 ▶ Vent all radiators, retighten when completed.
▶ Check the system and correct any leaks.
▶ Bleed air from at least one of the secondary heat exchanger air vents (a radiator key is ideal for this). There are two venting bosses (A) on the top of the secondary heat exchanger. Only one is used if fluing to the side. The (A) in use and (B) must be bled.
▶ Bleed air from the primary heat exchanger air vent (B).



STARTING THE APPLIANCE

IMPORTANT: Never run the appliance when the appliance/system is unpressurised (sealed systems) or empty.

- ▶ Check the oil supply is correctly fitted and in good working order before turning on the oil supply valves to the boiler.
- ▶ Turn on the main oil supply valve at the tank and draw off at least 2½ litres of oil until a steady flow of clear uncontaminated oil can be seen as follows:
- The oil supply to the boiler should be primed before the burner is operated to avoid unnecessary pump wear.
- The use of an oil suction pump will prime and flush through any oil supply set up simply and easily, alternatively the following procedures can be used.

▶ Single pipe gravity feed systems:

- ▶ Disconnect the flexible oil pipe and open the isolating valve to discharge the oil into a suitable container.
- ▶ If a top entry tank has been used the pipework will need to be primed before the oil will discharge under gravity.
- ▶ When completed, close the isolating valve, reconnect the flexible oil pipe.
- ▶ **Double pipe sub-gravity feed systems and single pipe suction lift with de-aerator:**

▶ To prime a de-aerator, disconnect the flexible oil inlet hose (E) from the isolation valve and place in a container of kerosene (F). Connect a spare flexible oil hose (G), to discharge into container (F). Open the isolating valve, turn on the power to the boiler and set the programmer to ON. Prime the de-aerator until there is a steady flow of oil into container (F). Turn off the boiler then reconnect the flexible oil inlet hose (E).

▶ Turn on the boiler, the oil level in the de-aerator will drop as the oil is used until the oil is drawn from the tank. If the de-aerator empties and the burner locks out before the oil is drawn from the tank, prime the de-aerator again.

▶ Open the isolating valve and the oil pump bleed valve (A) to discharge into a suitable container once the boiler is started up.

▶ Switch on the electricity supply to the boiler.

▶ Set the programmer to ON for CH and DHW.

▶ Turn on the boiler CH control thermostat.

▶ Allow the burner to run through to 'lock-out' indicated by the illumination of the lockout indicator on the lockout reset button (H).

▶ Wait 2 minutes then press the lockout reset button (H).

▶ Repeat the procedure at least 3 times or until a steady stream of oil, without air, runs from the bleed port, then relock bleed port (A).

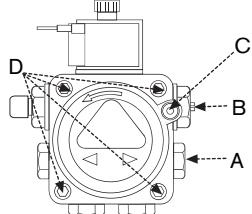
▶ Switch off the boiler.

▶ Remove the oil pump filter, clean with kerosene and refit.

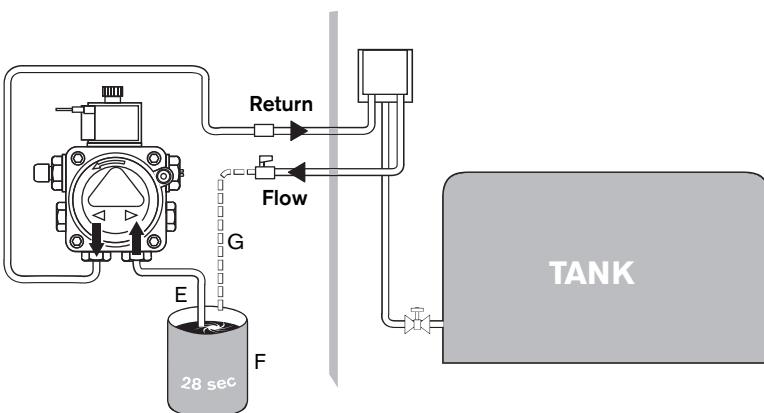
The internal filter is accessed by removing the oil pump cover.

▶ Safely dispose of the container/discharge.

RIELLO RDB OIL PUMP



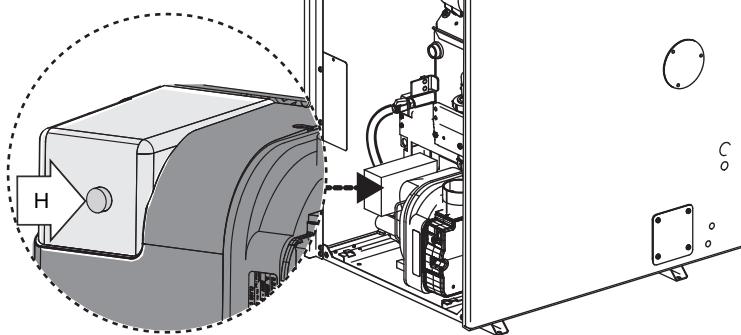
A - Bleed & pressure gauge port
B - Pressure adjustment
C - Vacuum gauge port
D - Retaining screws - cover



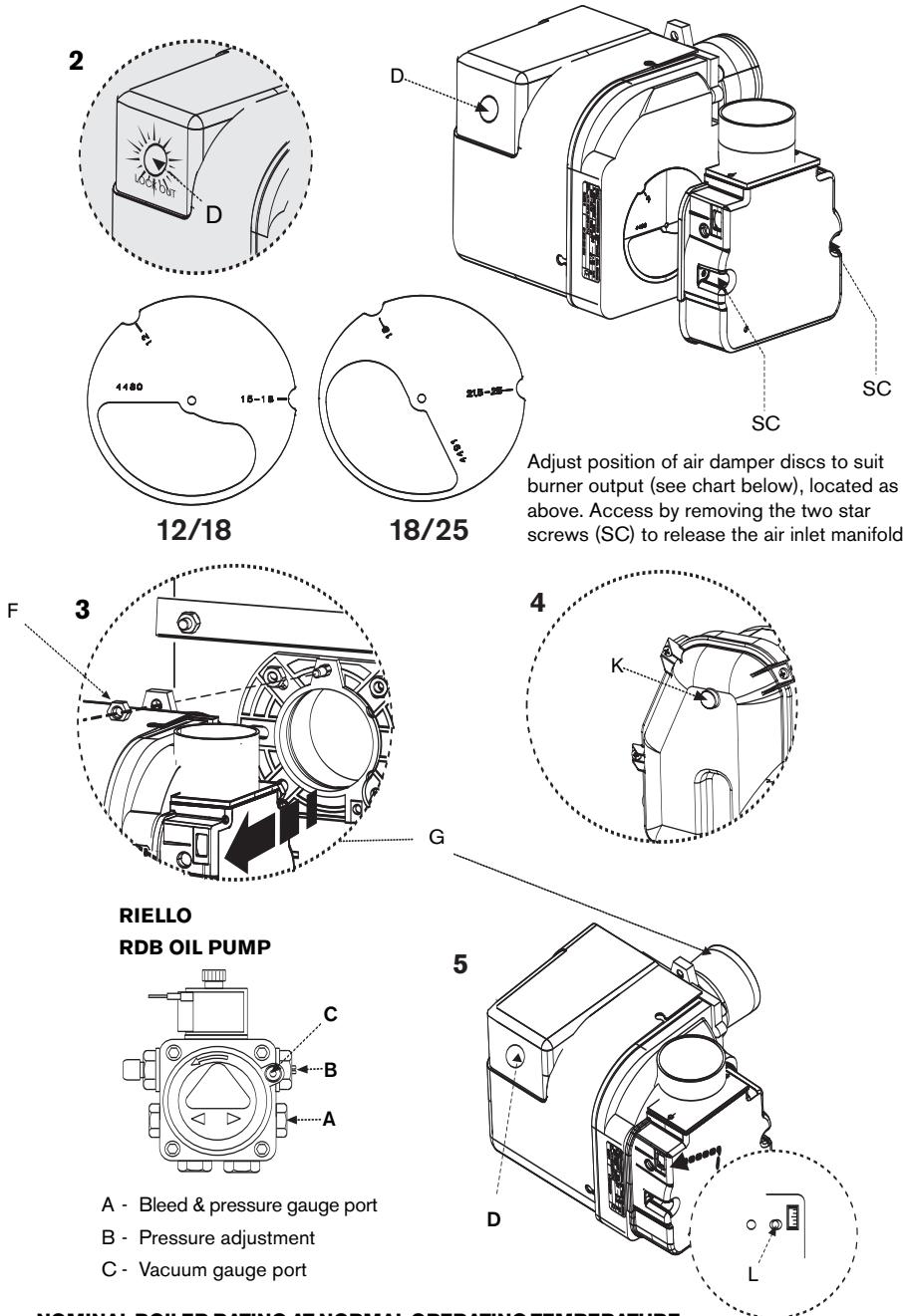
BURNER LOCKOUT

BURNER LOCKOUT RESET BUTTON

(On the burner control box)



STARTING THE APPLIANCE


**NOMINAL BOILER RATING AT NORMAL OPERATING TEMPERATURE
USING 28sec KEROSENE:**

NOZZLE	OIL PUMP PRESSURE (p.s.i.)	FUEL FLOW RATE		APPROX. FLUE GAS TEMP °C	%CO ₂	APPROX. AIR SETTING	INPUT (APPLIANCE) kW	OUTPUT (APPLIANCE) kW	AIR DAMPER DISC SETTING	BURNER HEAD
		Kg/h	l/h							
0.40 60°ES	100	1.04	1.32	63	11.5	2.25	12.3	12.0	12	LD 2X SH 12/18
0.45 60°ES	120	1.28	1.63	67	11.5	2.5	15.4	15.0	15-18	LD 2X SH 12/18
0.55 x 80°EH	105	1.54	1.96	73	12.0	3.5	18.5	18.0	15-18	LD 2X SH 12/18

Boiler 12/18 RDB 1

0.40 60°ES	100	1.04	1.32	63	11.5	2.25	12.3	12.0	12	LD 2X SH 12/18
0.45 60°ES	120	1.28	1.63	67	11.5	2.5	15.4	15.0	15-18	LD 2X SH 12/18
0.55 x 80°EH	105	1.54	1.96	73	12.0	3.5	18.5	18.0	15-18	LD 2X SH 12/18

Boiler 18/25 RDB 2.2

0.55 x 80°EH	105	1.55	1.96	75	11.0	3.5	18.5	18.0	18	T2 SH 18/25
0.60 60°ES	138	1.84	2.33	81	12.0	2.5	22.1	21.5	21.5-25	T2 SH 18/25
0.75 80°ES	120	2.15	2.72	81	12.5	4.5	25.7	25.0	21.5-25	T2 SH 18/25

Boiler 25/32 RDB 2.2

*0.65 80°EH	140	2.15	2.72	80	11.0	4.5	25.7	25.0	N/A	T2 L/H 25/32
0.75 80°EH	125	2.37	3.0	81	12.0	4.0	28.3	27.5	N/A	T2 L/H 25/32
0.85 80°EH	125	2.58	3.27	83	12.5	4.5	30.8	30.0	N/A	T2 L/H 25/32

* 25/32 model for 25kW remove the plastic air guide (see following page).

2 ▶ Remove plastic cover from the burner casing.
▶ Fit a suitable pressure gauge to port (A) on the oil pump.
▶ Adjust the air shutter (L) and pump pressure (B) as shown in the table opposite. The burner should ignite following a pre-ignition period of approx. 15 seconds.
▶ If changing the burner output, check the position of the air damper disc is correct to the output as shown in the table below.
NOTE: For 25/32 appliance see following page.

Boiler lockout indicator on:

If the burner fails to establish a normal firing pattern or flame failure occurs the flame monitoring photocell mounted in the burner body will alert the burner control box to shut the burner down and provide a safe lockout state indicated by the illumination of the lock-out indicator (D).

3 ▶ Wait 2 minutes then press the lockout reset button (D) to initiate another start sequence.
▶ Repeat procedure until a flame is established.

4 ▶ Start and run for 3 minutes then switch off.
▶ Check for after-sputtering from the nozzle, indicated by oil saturation on the combustion head (G).

If after-sputtering occurs:

▶ Release the burner retainer (F).
▶ Remove the burner, combustion head (G) and electrodes, hold the burner vertical to unscrew the nozzle and fill the nozzle holder with kerosene.
▶ Refit nozzle, electrodes, combustion head (G) and the burner.
▶ Restart and run for 3 minute intervals until after-sputtering stops.

5 ▶ Start and run for 20 minutes.
▶ Remove sampling point plug (K) to check the smoke reading is between 0-1. If the smoke level is above 1, check the combustion settings are correct and the oil nozzle is in good condition.

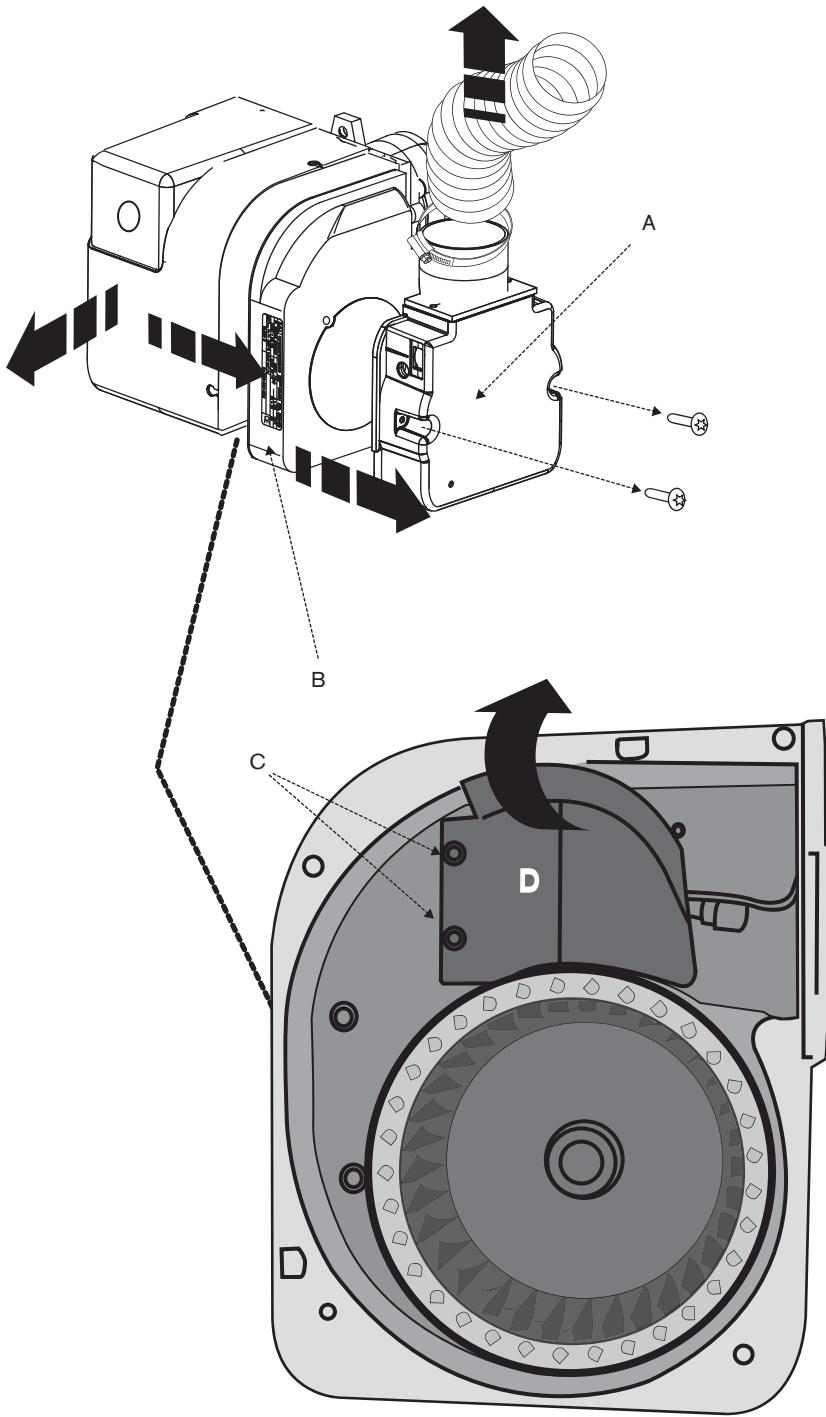
Note: smoke readings may be inaccurate until the smoke from burning organic binder in the access door insulation has ceased.

▶ Check the CO₂ levels and adjust the air shutter (L) setting according to the table opposite.
▶ Check the flue gas temperature is close to the values shown in the table.

If the flue gas temperature is too high and the baffles are correctly fitted, then reduce the oil pump pressure (B) 5-10p.s.i. to compensate for nozzle variations.

▶ Turn off the electrical supply.
▶ Isolate the oil supply to the burner.
▶ Remove the oil pressure gauge.
▶ Refit the blanking plug (A).
▶ Check and rectify any oil leaks.

6 ▶ Switch on the oil supply.
▶ Switch on the electrical supply.
▶ Restart the boiler and run for 5 minutes.
▶ Recheck the CO₂ levels and if required, adjust the air shutter setting (L) to obtain the correct CO₂ level.

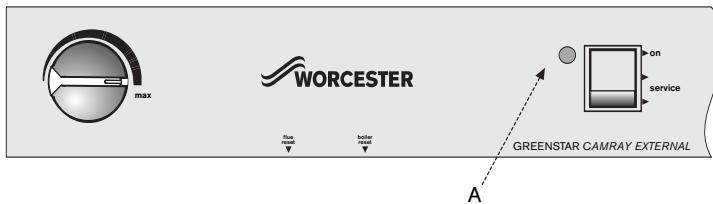
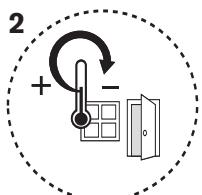
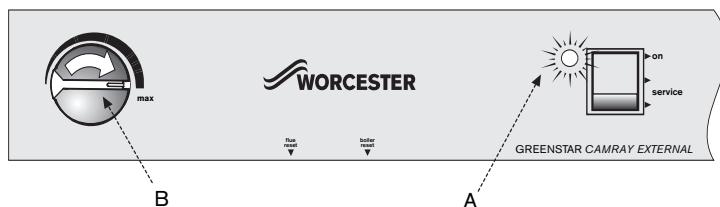
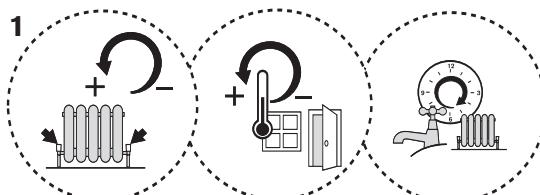


STARTING THE APPLIANCE

On 25/32 Appliances:

To achieve the minimum output of 25kW from the 25/32 RDB 2.2 it is necessary to remove the air guide (D) from the burner. For any other required output the air guide must remain in place.

- ▶ Disassemble the burner, removing the red plastic cover, flexible air hose and air intake manifold (A).
- ▶ Remove the fan housing (B) by undoing the four securing screws.
- ▶ Remove the two screws (C) securing the plastic air guide.
- ▶ Remove air guide (D) and reassemble the burner in reverse order.



STARTING THE APPLIANCE

Central heating:

- 1 ▶ Open all radiator valves.
- ▶ Set room thermostat to maximum.
- ▶ Set programmer to ON for CH, OFF for DHW (if applicable).
- ▶ Turn the thermostat control (B) to 'max'.

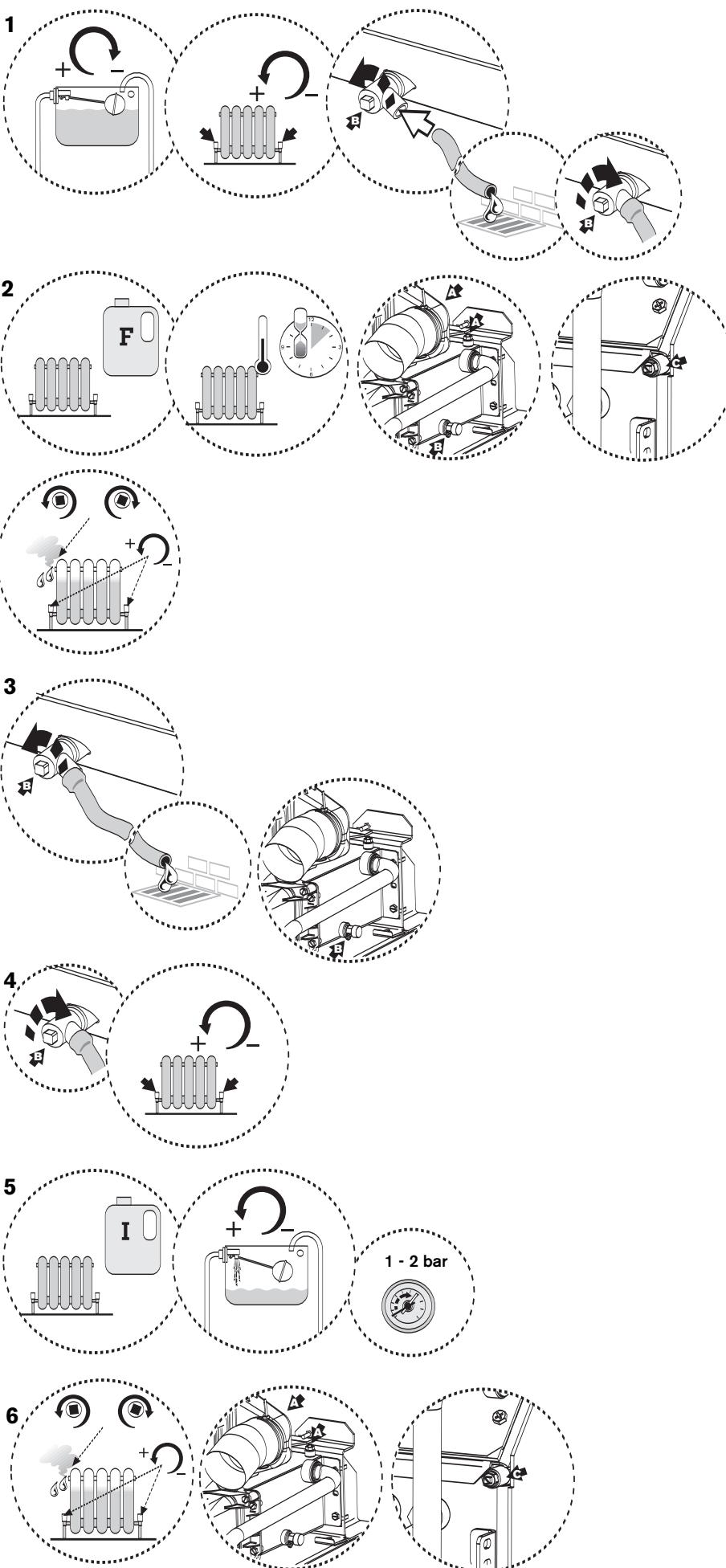
The demand indicator (A) should illuminate and the burner should be ON with the circulating pump.

- ▶ Ensure all radiators are heating up evenly and balance the system to the temperature difference required for the heating flow and return according to the heating load.

2 ▶ Set the room thermostat to minimum.

The demand indicator light (A), burner and circulating pump should be off.

3 ▶ Check that any other controls that are fitted to the system are operating properly.



WATER TREATMENT

IMPORTANT: Debris from the system can damage the boiler and reduce efficiency. Failure to comply with the guidelines for the use of water treatment with the appliance will invalidate the appliance warranty.

FLUSHING (Central Heating):

- 1 ▶ Switch off the boiler.
- ▶ Open vented systems only: turn off the water to the system header tank.
- ▶ Open all radiator valves/drain cocks (B) and drain the system while the appliance is hot.
- ▶ Close drain cocks (B).
- 2 ▶ Add a suitable flushing agent (F) and refill the system at the correct strength for the system condition in accordance with the manufacturer's instructions.
- ▶ Vent the boiler using a radiator key or suitable screwdriver (there are two vent points (A) at the top of the secondary heat exchanger. Only one may be in use, the other may be obscured by side fluing. Always vent (A) and the vent point on the primary heat exchanger (C) and all radiators.
- ▶ Run the boiler/system at normal operating temperature for the time stated by the flushing agent manufacturer.

- 3 ▶ Drain and thoroughly flush the system to remove the flushing agent and debris (B).

INHIBITOR (Central Heating):

- 4 ▶ Check drain cocks (B) and manual air vents are closed and all radiator valves are open.
- 5 ▶ Add a suitable inhibitor (I), (or combined inhibitor/anti-freeze if the system is exposed to freezing conditions) to the heating system in accordance with the manufacturers instructions.

The inhibitor or combined inhibitor/anti-freeze must not cause damage to the materials within the boiler (mild steel, stainless steel, copper and brass) and any other materials/components within the system.

- ▶ Open vented systems only: turn on the water to the system header tank and allow the system to fill.
- ▶ Sealed systems only: fill the system to between 1 and 2 bar via a WRAS approved filling loop.

- 6 ▶ Vent the boiler, (there are two vent points (A) at the top of the secondary heat exchanger. Only one may be in use, the other may be obscured by side fluing. Always vent (A) and the vent point on the primary heat exchanger (C) and all radiators; retighten vents when complete.

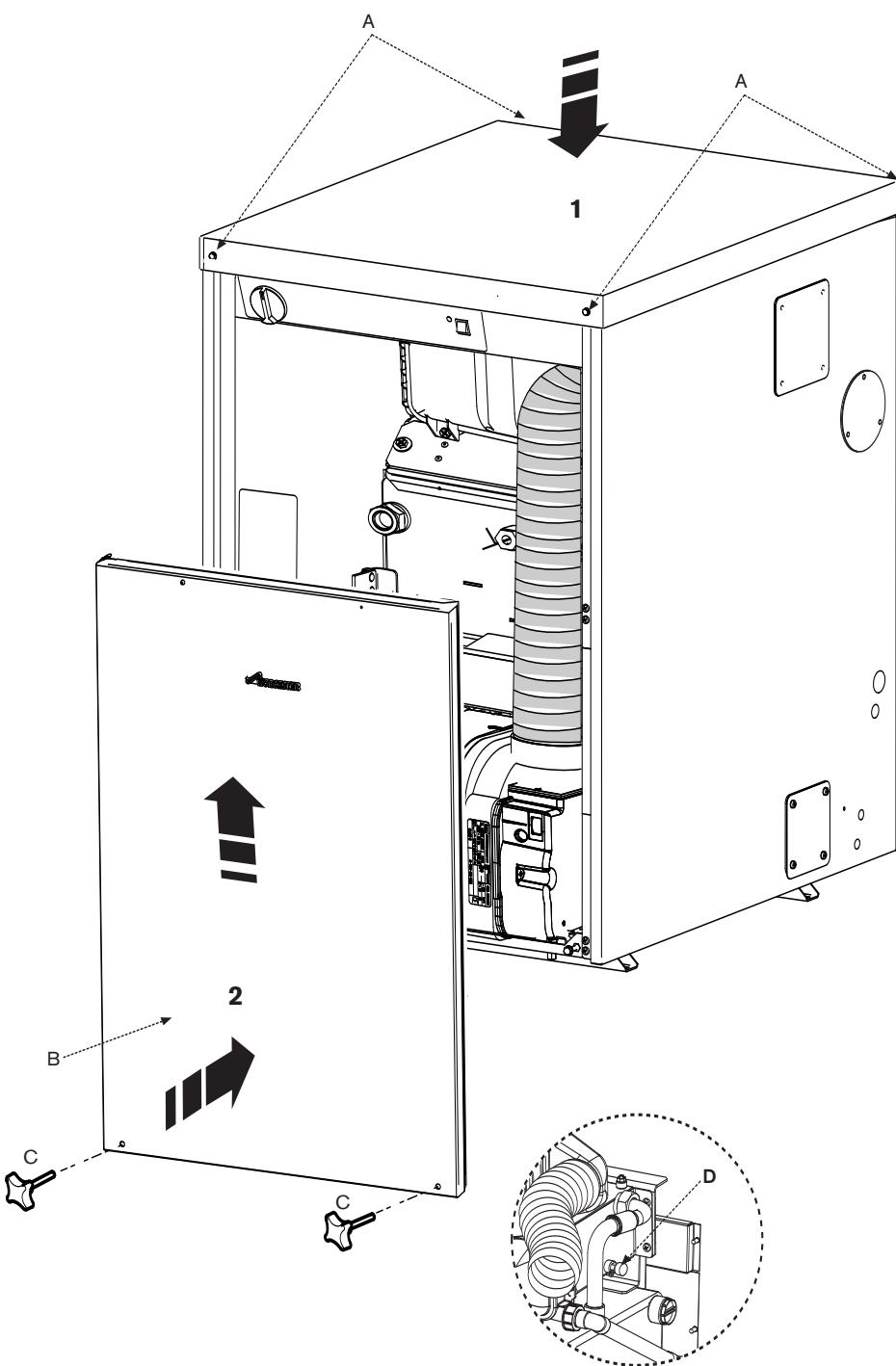
- 7 ▶ Record the date when the inhibitor was added to the system on the guarantee card.

NOTE: The concentration level of inhibitor in the system should be checked every 12 months or sooner if system content is lost.

The addition of sealing agents to the system water is not permitted as this can cause problems with deposits left in the heat exchanger and invalidate the appliance and heat exchanger warranty .

FINISHING COMMISSIONING - APPLIANCE

COMMISSIONING

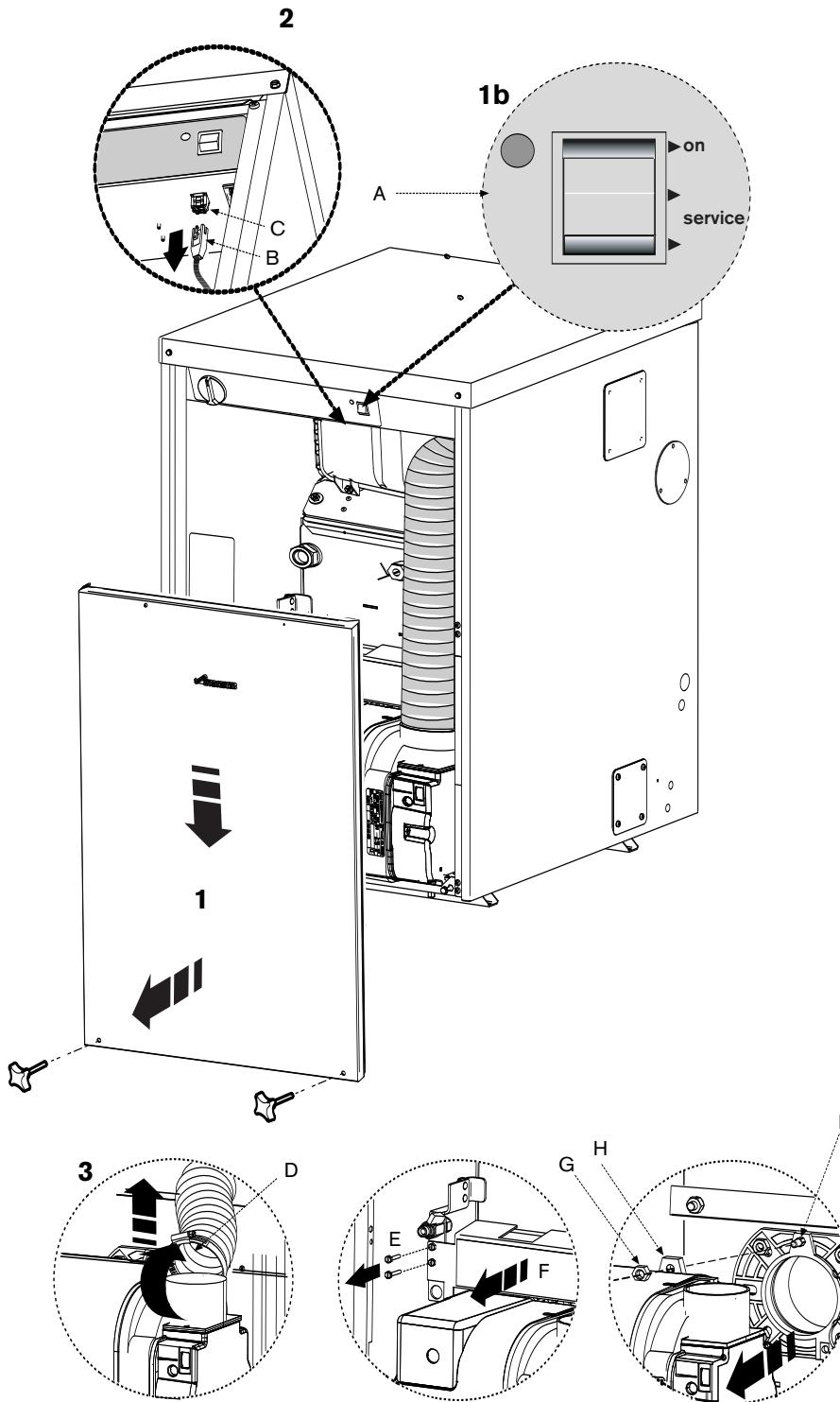


- 1 Refit the top panel and press down to compress the seal when fitting the securing screws (A).
- 2 Push the front panel (B) up behind the top panel and push in at the base to secure with the easy grip screws (C).

Handover:

- Complete the Guarantee Registration Card, Combustion Record (page 47) and a CD11 or an equivalent commissioning form.
- Set up the controls and show the user how to operate all the controls shown in the User Guide and all system controls.
- Where applicable, instruct the customer how to repressurise the system.
- If the appliance is unused and exposed to freezing conditions, shut off all the mains supplies and drain the system and boiler.

NOTE: Release drain point (D) to drain the secondary heat exchanger.



CAUTION: ISOLATE THE WATER, ELECTRICITY AND OIL MAINS SUPPLIES BEFORE STARTING ANY WORK AND OBSERVE ALL RELEVANT SAFETY PRECAUTIONS.

DO NOT USE PRESSURE WASHERS OR STEAM CLEANERS ON THIS APPLIANCE OR ITS CABINET.

WARNING: EXTERNAL EQUIPMENT OPERATED AT 230 VOLTS SHOULD NOT BE SERVICED OR REPAIRED UNDER ADVERSE WEATHER CONDITIONS

Routine servicing:

To assist efficient boiler operation, the following should be carried out at least once a year.

- ▶ Carry out a pre-service check and note any operational faults:

▶ Pre-Service Check:

- 1 ▶ Remove the easy grip screws from the base of the front panel and pull down and out to remove the panel. Store safely away from the working area.

Operate the appliance and system and note any faults which may need to be corrected during the service.

- 1 ▶ Switch into service mode at switch (A).
- 2 ▶ Depress locking ears and unplug burner lead (B) from control box (C).
 - An adapter lead is available to allow mains voltage service aids to be operated from the service connection. (Service lead Part No. 7 716 192 313 0).
- 3 ▶ Loosen clip (D) to detach air duct pipe.
- 4 ▶ Undo the two screws securing the deflector plate (E) and remove the plate (F).
- 5 ▶ Unscrew burner retainer nut (G) and gently pull burner forward so that the retainer (H) is free of the lug (I).

See the following instructions for detail of some of the service requirements listed below:

- ▶ Check and clean the burner.
- ▶ Replace burner nozzle and flexible oil pipe/s.
- ▶ Check and clean the baffle retainers.
- ▶ Check and clean the baffles.
- ▶ Check and clean the heat exchanger surfaces.
- ▶ Check the combustion chamber access door insulation board.
- ▶ Check that the flue system is unobstructed and clean as necessary.
- ▶ Clean or replace all oil filters.
- ▶ Check that the condensate system is not obstructed, clean and refill as necessary.

1 Clean the Burner:

- Remove the air intake cover (A) and clear any debris from the air intake and air damper.
- Disassemble the burner to allow access to the fan impeller.
- Check the condition of the gaskets between these parts and replace if necessary.
- Note the position of the air damper adjustment and check the air damper moves freely.
- Clean both sides of the fan impeller and remove any debris from the burner housing.
- Check that the impeller rotates freely.
- Reassemble the components.
- Remove the combustion head (B) and thoroughly clean any deposits.

IMPORTANT: Before removing or fitting a nozzle (C), loosen screw (D) and move the electrodes (E) forward.

After refitting check that the electrode gaps are correct, as shown opposite.

- Remove the nozzle (C).
- Check the nozzle holder is clear of any debris and clean if necessary.
- Fit a new oil atomising nozzle (C).

DO NOT dismantle the nozzle and DO NOT clean the nozzle tip.

- Check the electrodes (E) and reset if necessary as shown opposite.

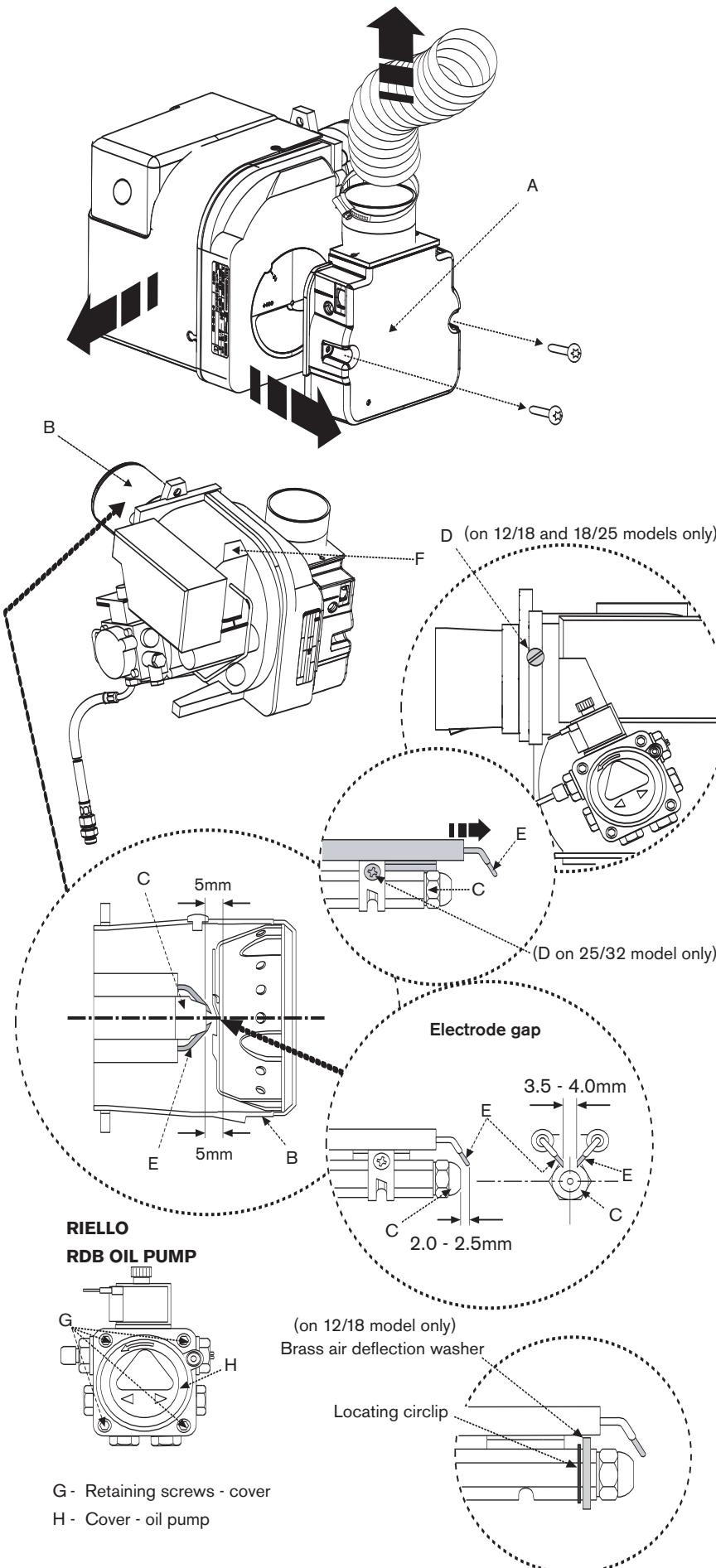
NOTE: The 12/18 model has a brass air deflection washer and locating circlip behind the nozzle. These must be in place for the correct operation of the burner.

- Refit the combustion head (B). Check that the nozzle (C) lies central to the combustion head (B) and the head settings are as shown. Ensure that the photocell is lined up with the sight hole.
- Withdraw the photocell (F) from its housing and wipe clean.
- Remove the oil pump internal filter, clean in kerosene and reassemble.

The internal filter is accessed by removing screws (G) and the oil pump cover (H).

- Replace the standard flexible oil line/s at every annual service to prevent the possibility of leakage due to ageing.
- Reassemble the burner components.
- Check the O-ring seal located around the combustion head and replace if necessary.

This seal must be in good condition, seal failure will cause flue gases to escape into the cabinet.



INSPECTION AND SERVICE

External oil filter:

- ▶ Remove the paper element from the external oil filter and replace it. If the filter contains a washable element, thoroughly clean in kerosene and reassemble into the filter.

Clean the boiler:

Manifold access:

- ▶ Remove top cover by releasing the screws (A) at each corner and lift free.
- ▶ Release screws (B) to remove the flue manifold access cover (C) and clear any debris.
- ▶ Check the condensate route (D) is clear and clean the condensate trap and pipework.
- ▶ Check the flue system and clean if necessary.
- ▶ Remove the baffle retainer (E) and baffles (F) from the secondary heat exchanger.
- ▶ Check and clean the secondary heat exchanger surfaces.

NOTE: Do not use wire brushes and cleaning agents to clean the stainless steel secondary heat exchanger components.

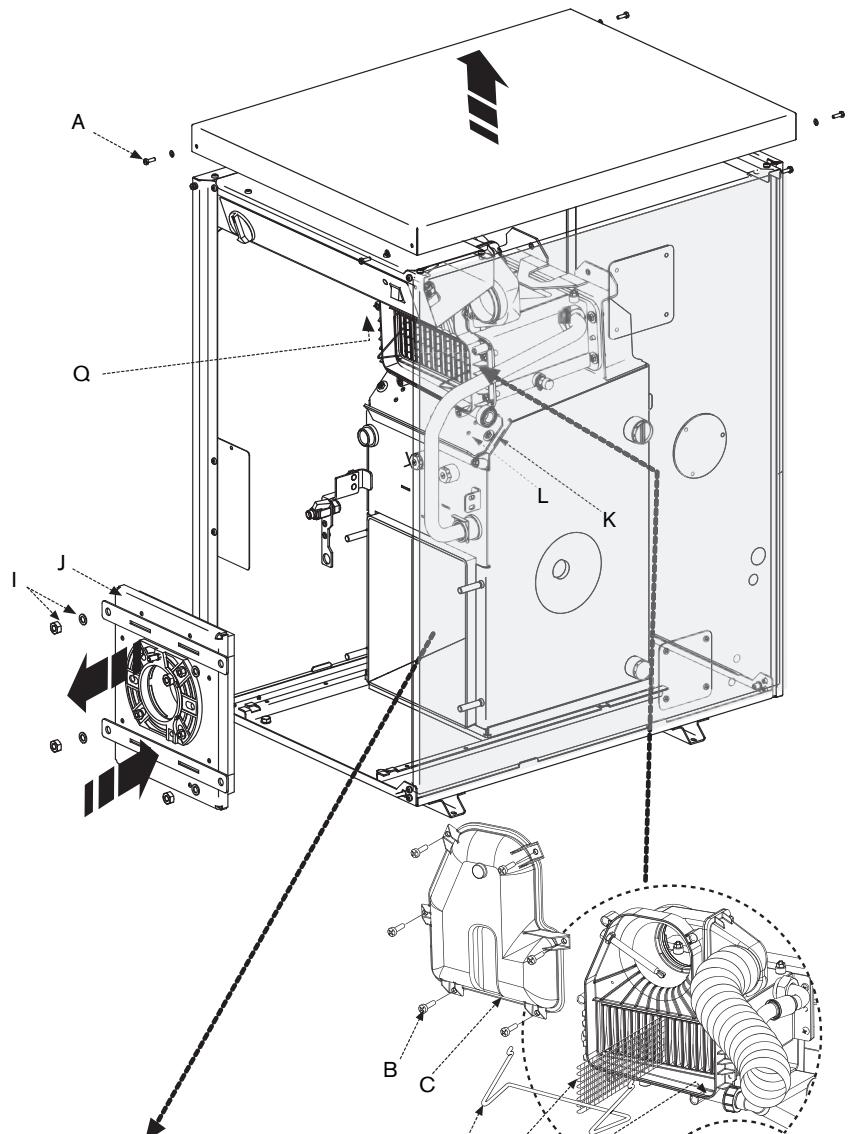
- ▶ Pour 500ml of water into drain (G) to refill the condensate trap.
- ▶ Clean the secondary heat exchanger baffles (F) if necessary and refit correctly.
- ▶ Refit the baffle retainer (E).
- ▶ Check the seal on the manifold access cover (C) and replace if necessary.
- ▶ Refit the flue manifold access cover (C) and secure with screws (B).

Combustion chamber:

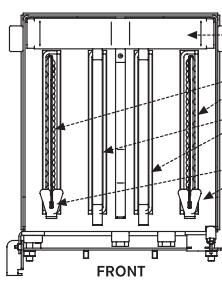
- ▶ Release the M10 retaining nuts and washers (1) and remove combustion chamber access door (J).
- ▶ Check the fibreglass rope seal on the combustion chamber access door (J) and replace if necessary.
- ▶ Remove the 2 screws (K) and baffle access panel (L) located at the top of the primary heat exchanger and remove the baffle retainers (M).
- ▶ Remove the baffles (N) and restrictor plate/s (O, not on 25/32 model), clean and check the condition of the baffles and the restrictor plate/s. Replace any parts considered to be badly corroded/degraded.
- ▶ Remove the acoustic insulation insert (P).
- ▶ Thoroughly clean all of the heat exchanger surfaces using a suitable brush and clear all loose debris from the combustion chamber and upper chamber.
- ▶ Check the condition of the combustion chamber access door insulation. If the insulation is damaged the door assembly must be replaced.
- ▶ Check the condition of the baffle access panel seal.
- ▶ Refit the acoustic insulation insert (P).
- ▶ Refit the items in reverse order ensure the baffles (N), baffle retainers (M) and restrictor plate/s (O, not on 25/32 model) are correctly fitted for the boiler output as shown in the plan view opposite.
- ▶ Refit baffle access panel (L).
- ▶ Refit combustion chamber access door (J).
- ▶ Secure with nuts and washers (1) and tighten until the door is firmly secured using the sequence shown opposite. Do not over tighten the nuts.

Fire valve:

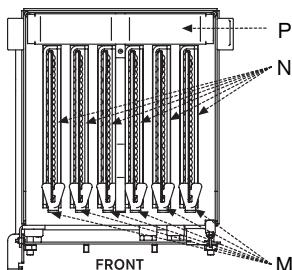
- ▶ Check that the oil supply pipe has a fire valve fitted externally to the building with the fire valve sensor located within the appliance case. A fire valve sensor clip (Q) is provided for this purpose.



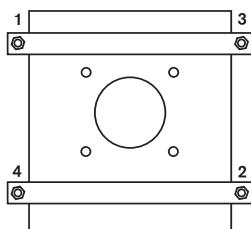
12/18
Plan sectional view



25/32
Plan sectional view



IMPORTANT when refitting the combustion chamber access door (4)



Combustion chamber access door tightening sequence.

Re-commission the burner:

- 1 Align burner combustion head into boiler collar.
- Locate the burner retainer (A) over the threaded lug on the collar (B), push the burner firmly onto the flange and secure in place with the retaining nut (C). Tighten sufficiently but do not overtighten.
- Check that the burner is seated correctly on its mounting flange and that the oil pipe/s are not trapped in front of or underneath the burner.
- Refit the deflector plate (D) and secure with screws (E). Ensure that the flexible oil pipe/s are not positioned between the deflector plate and the combustion chamber door.
- Attach air duct pipe and tighten clip (F) to secure to the burner air intake.

IMPORTANT:

Ensure the gasket is a good seal between the burner combustion head and the boiler housing to prevent flue gases escaping.

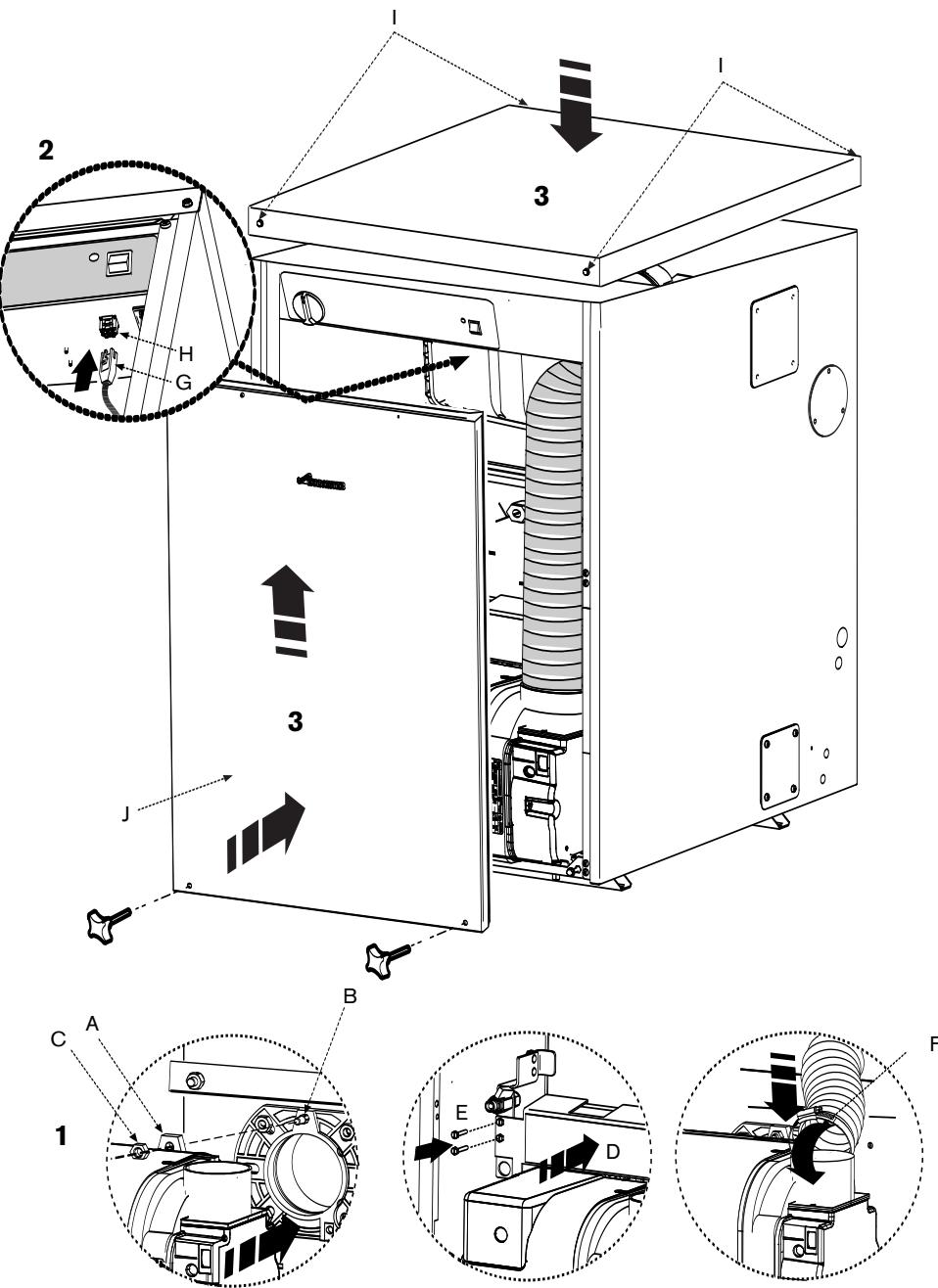
- 2 Plug burner lead (G) into control box (H). Re-commission the burner as described in 'STARTING THE APPLIANCE' under the Commissioning section.

Refit panels:

- 3 Refit the top panel and press down to compress the seal when fitting the securing screws (I).
- Push the front panel (J) up behind the top panel and push in at the base to secure with the easy grip screws.

After service handover:

- Make a note of the date of any water treatment.
- Set the controls back to the users requirements.
- If the appliance is unused and exposed to freezing conditions; shut off all the mains supplies, isolate the boiler and drain the system and boiler, including the secondary heat exchanger.

NOMINAL BOILER RATING AT NORMAL OPERATING TEMPERATURE
USING 28sec KEROSENE:

NOZZLE	OIL PUMP PRESSURE (p.s.i.)	FUEL FLOW RATE		APPROX. FLUE GAS TEMP °C	%CO ₂	APPROX. AIR SETTING	INPUT (APPLIANCE) kW	OUTPUT (APPLIANCE) kW	AIR DAMPER DISC SETTING	BURNER HEAD
		Kg/h	l/h							

Boiler 12/18 RDB 1

0.40 60°ES	100	1.04	1.32	63	11.5	2.25	12.3	12.0	12	LD 2X SH 12/18
0.45 60°ES	120	1.28	1.63	67	11.5	2.5	15.4	15.0	15-18	LD 2X SH 12/18
0.55 x 80°EH	105	1.54	1.96	73	12.0	3.5	18.5	18.0	15-18	LD 2X SH 12/18

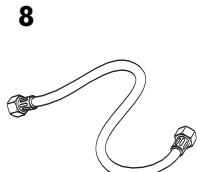
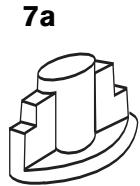
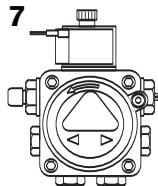
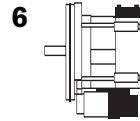
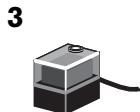
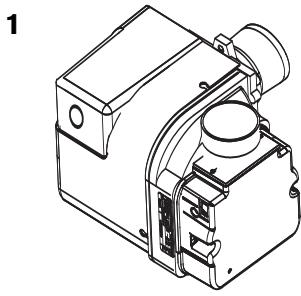
Boiler 18/25 RDB 2.2

0.55 x 80°EH	105	1.55	1.96	75	11.0	3.5	18.5	18.0	18	T2 SH 18/25
0.60 60°ES	138	1.84	2.33	81	12.0	2.5	22.1	21.5	21.5-25	T2 SH 18/25
0.75 80°ES	120	2.15	2.72	81	12.5	4.5	25.7	25.0	21.5-25	T2 SH 18/25

Boiler 25/32 RDB 2.2

*0.65 80°EH	140	2.15	2.72	80	11.0	4.5	25.7	25.0	N/A	T2 L/H 25/32
0.75 80°EH	125	2.37	3.0	81	12.0	4.0	28.3	27.5	N/A	T2 L/H 25/32
0.85 80°EH	125	2.58	3.27	83	12.5	4.5	30.8	30.0	N/A	T2 L/H 25/32

* 25/32 model for 25kW remove the plastic air guide (see page 33).



10



11



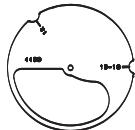
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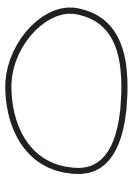
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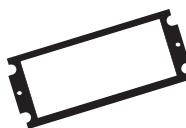
14



16



17



18



19



20



21



22



SHORT PARTS LIST 12/18

1 **Burner - Riello RDB 1** 12/18

Part Number: 8 716 111 951 0

2 **Combustion head - LD2X SH12/18**

Part Number: 8 716 112 731 0

3 **Control box 535 RSE/LD**

Part Number: 8 716 109 203 0

4 **Photocell**

Part Number: 8 716 109 193 0

5 **Ignition electrode**

Part Number: 8 716 109 183 0

6 **Motor**

Part Number: 8 716 109 186 0

7 **Oil pump - Riello RDB**

Part Number: 8 716 109 182 0

7a **Pump coupling**

Part Number: 8 716 109 245 0

8 **Flexible oil line kit**

Part Number: 8 716 106 346 0

9 **Burner 'O' ring**

Part Number: 8 716 109 328 0

10 **Control thermostat**

Part Number: 8 716 197 621 0

11 **Auto reset high limit thermostat**

Part Number: 8 716 107 623 0

12 **Manual reset overheat thermostat**

Part Number: 8 716 107 625 0

13 **Manual reset flue overheat thermostat**

Part Number: 8 716 107 624 0

14 **Air damper disc 12 15-18**

Part Number: 8 716 112 778 0

15 **Cleaning brush**

Part Number: 8 716 109 428 0

16 **Manifold access cover seal**

Part Number: 8 716 107 536 0

17 **Secondary Heat Exchanger gasket**

Part Number: 7 747 009 725 0

18 **Nozzle holder**

Part Number: 8 716 112 777 0

19 **Circlip**

Part Number: 8 716 112 773 0

20 **Brass air restrictor washer**

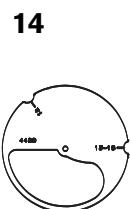
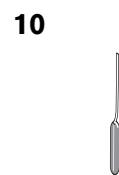
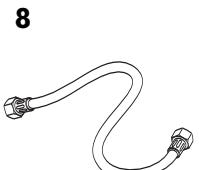
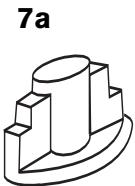
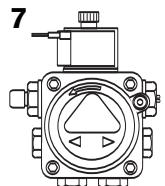
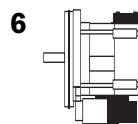
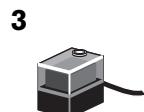
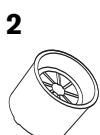
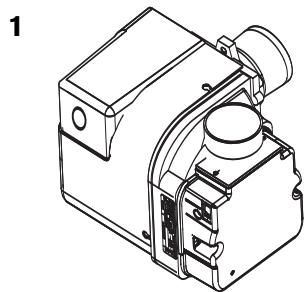
Part Number: 8 716 112 729 0

21 **Frost thermostat**

Part Number: 8-716-105-965-0

22 **Service lead**

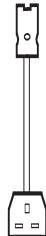
Part Number: 7-716-192-313-0



18



19



1. Burner - Riello RDB 2.2 18/25

Part Number: 8 716 112 346 0

2. Combustion head - T2 SH12/18

Part Number: 8 716 112 780 0

3. Control box 535 RSE/LD

Part Number: 8 716 109 203 0

4. Photocell

Part Number: 8 716 109 193 0

5. Ignition electrode

Part Number: 8 716 109 183 0

6. Motor

Part Number: 8 716 109 186 0

7. Oil pump - Riello RDB

Part Number: 8 716 109 182 0

7a. Pump coupling

Part Number: 8 716 109 245 0

8. Flexible oil line kit

Part Number: 8 716 106 346 0

9. Burner 'O' ring

Part Number: 8 716 109 328 0

10. Control thermostat

Part Number: 8 716 197 621 0

11. Auto reset high limit thermostat

Part Number: 8 716 107 623 0

12. Manual reset overheat thermostat

Part Number: 8 716 107 625 0

13. Manual reset flue overheat thermostat

Part Number: 8 716 107 624 0

14. Air damper disc 18 21.5-25

Part Number: 8 716 112 783 0

15. Cleaning brush

Part Number: 8 716 109 428 0

16. Manifold access cover seal

Part Number: 8 716 107 536 0

17. Secondary Heat Exchanger gasket

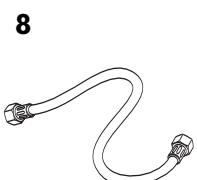
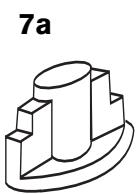
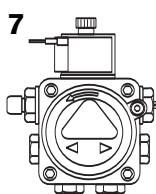
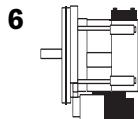
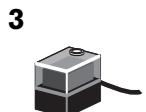
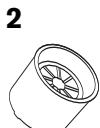
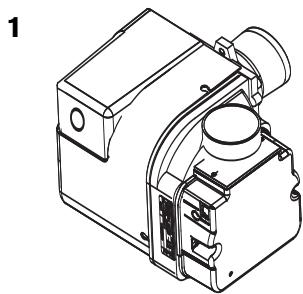
Part Number: 7-747-009-725-0

18. Frost thermostat

Part Number: 8-716-105-965-0

19. Service lead

Part Number: 7-716-192-313-0



10



11



12



13



14



15



16



17



18



1 Burner - Riello RDB 2.2 25/32

Part Number: 8 716 112 347 0

2 Combustion head - T2 LH25/32

Part Number: 8 716 112 769 0

3 Control box 535 RSE/LD

Part Number: 8 716 109 203 0

4 Photocell

Part Number: 8 716 109 193 0

5 Ignition electrode

Part Number: 8 716 109 183 0

6 Motor

Part Number: 8 716 109 186 0

7 Oil pump - Riello RDB

Part Number: 8 716 109 182 0

7a Pump coupling

Part Number: 8 716 109 245 0

8 Flexible oil line kit

Part Number: 8 716 106 346 0

9 Burner 'O' ring

Part Number: 8 716 109 328 0

10 Control thermostat

Part Number: 8 716 197 621 0

11 Auto reset high limit thermostat

Part Number: 8 716 107 623 0

12 Manual reset overheat thermostat

Part Number: 8 716 107 625 0

13 Manual reset flue overheat thermostat

Part Number: 8 716 107 624 0

14 Cleaning brush

Part Number: 8 716 109 428 0

15 Manifold access cover seal

Part Number: 8 716 107 536 0

16 Secondary Heat Exchanger gasket

Part Number: 7 747 009 725 0

17 Frost thermostat

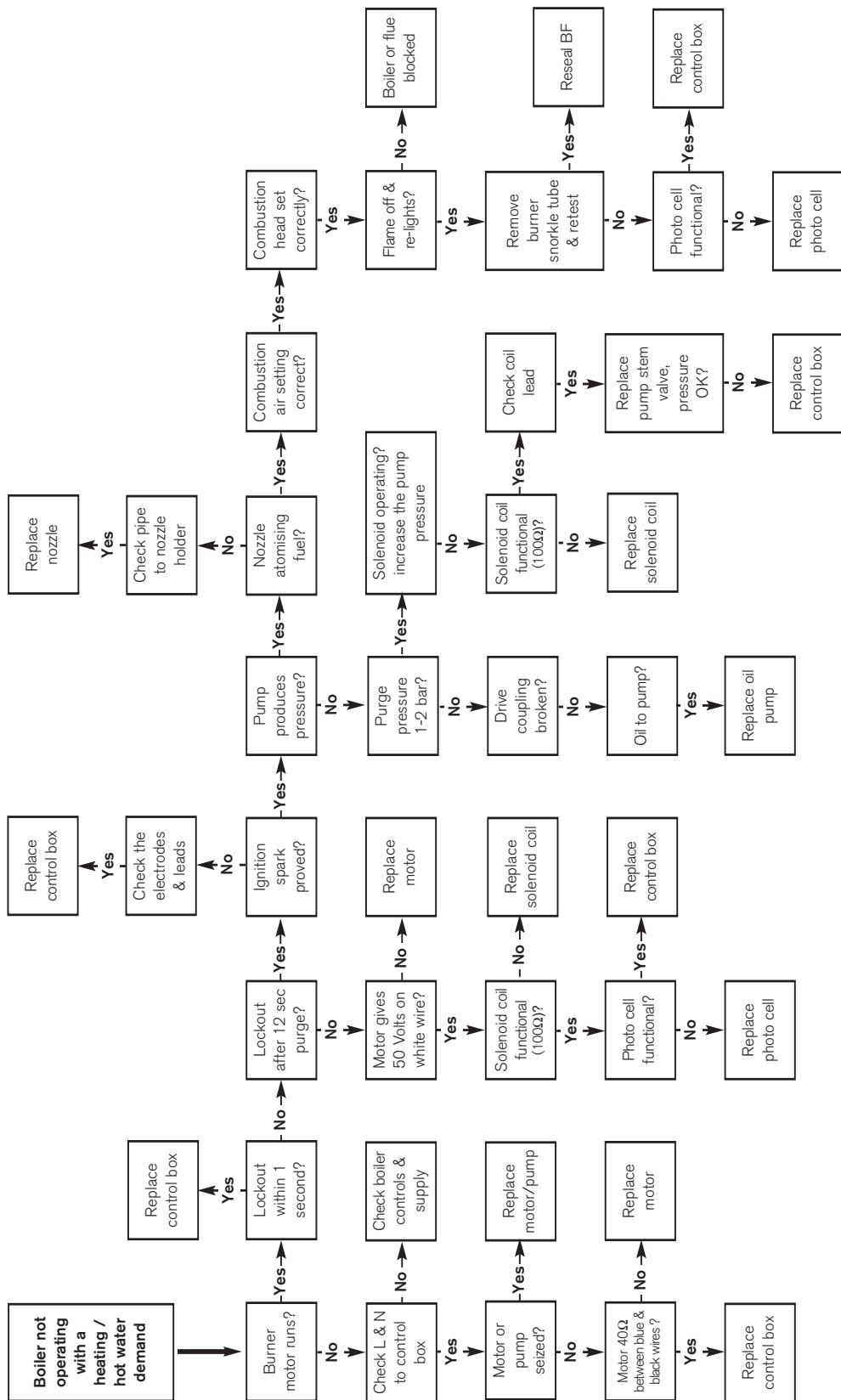
Part Number: 8-716-105-965-0

18 Service lead

Part Number: 7-716-192-313-0

PROBLEM	CAUSE	REMEDY	FAULT FINDING
LOCKOUT:			
Pulsation on start	CF - Flue draught incorrect Combustion settings incorrect Faulty nozzle	CF - Check flue draught Set up as in installation instructions Replace nozzle	BOILER LOCKOUT : Indicated by the illumination of the 'Lockout' indicator on the burner. To reset, wait 2 minutes then press the lockout reset button.
Intermittent lockout	Bad electrical connection Intermittent flame detection fault CF down draught	Check control box/electrical connections See flame detection fault CF Extend flue or fit an anti down draught cowl	Also refer to fault finding logic on page 46.
Burner motor fails to operate	Faulty motor or electrical supply to motor Control box fault	Check for 230V to motor during startup period Replace control box	
Flame detection fault	Photocell filmed over (dirty) Photocell faulty Control box faulty	Clean Replace Replace	
Incorrect CO ₂	Air adjustment fault Oil pressure incorrect	Set up as in installation instructions Set up as in installation instructions	
No oil from nozzle	No oil at pump Air in pump Nozzle blocked Faulty pump or drive coupling	Check and refill oil tank/bleed oil line Check and clean filters & valves from oil tank to boiler Bleed pump Replace nozzle Replace	
Ignition failure	Electrode settings incorrect Faulty ignition transformer Open circuit ignition Faulty control box or electrical connections not properly made	Set up as in installation instructions Replace control box Check and replace electrodes or high tension leads if necessary Correct electrical control box connections or replace control box	
BURNER FAILS TO START:	No power to boiler Faulty boiler thermostat Programmer open circuit Faulty control box	Check electrical / control circuit Check by temporarily linking out high limit and control thermostats Check by temporarily linking out the programmer Replace control box	
HIGH SMOKE NUMBER:	Air intake/flue blocked Incorrect combustion settings Oil pressure incorrect Incorrect components used on combustion head Faulty nozzle	Check & clear air intake/flue Set up as in installation instructions Adjust to correct pressure Check with installation instructions Replace nozzle	UNDER NO CIRCUMSTANCES MUST A APPLIANCE BE LEFT TO OPERATE WITH ANY CONTROL LINKED OUT OR OVERRIDDEN.

PROBLEM	CAUSE	REMEDY	FAULT FINDING
FAULTY BOILER OPERATION:			
Noisy operation	Pump noise from air in pump or worn pump Worn motor bearings Fan out of balance	Bleed air from pump or replace pump Replace motor Replace fan	
Boiling	Faulty boiler thermostat Short circuit boiler thermostat Thermostat bulb not fully home in pocket No primary water circulation	Replace if necessary Take out of circuit to check Ensure bulb is pushed fully home Check system / circulating pump	
Short Cycling	Burner rating incorrect Boiler thermostat differential incorrect External controls not operating correctly	Correct burner rating Replace boiler thermostat Check and correct external controls	
OIL SMELLS:	Blocked flue, fumes on startup Oil soaked boiler, faulty burner operation, numerous lockouts Odour in cabinet, oil leaks from pipework, flexible hoses connections	Check seals/gaskets Rectify burner operation and lockouts Rectify oil leaks, replace components if necessary	



All resistance measurements are actual measured values and some variation is to be expected, therefore measured values should be similar to but not necessarily identical to the given values.

The operation of the photo cell can be tested by measuring the resistance across the photo cell, it should be a high resistance (greater than $10M\Omega$ or open circuit) in the dark and low resistance ($3k\Omega$ or less) in light.

Burners on balanced flue systems can recirculate flue products resulting in the burner cycling, if this happens check the flue system integrity and the terminal position.

OIL BOILER COMBUSTION RECORD

BOILER MODEL _____ SERIAL No. _____

COMMISSIONING ENGINEER

COMBUSTION CHECKS

COMPANY NAME:	PUMP PRESSURE (PSI):
ADDRESS:	CO ₂ %:
ENGINEERS NAME:	SMOKE READING:
SIGNATURE:	F.G.T°C:
DATE:	FLUE PRESSURE:
	BURNER MODEL:

FOR ALL BOILERS CONFIRM THE FOLLOWING

THE CONDENSATE DRAIN HAS BEEN INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS	YES <input type="checkbox"/>
OIL TYPE USED IS 28 SECOND KEROSENE	YES <input type="checkbox"/>
THE SYSTEM HAS BEEN FLUSHED IN ACCORDANCE WITH THE INSTRUCTIONS?	YES <input type="checkbox"/>
THE SYSTEM CLEANER USED:	
THE INHIBITOR USED:	

SERVICE INTERVAL RECORD It is recommended that the heating system is serviced regularly and that you complete the appropriate Service Interval Record Overleaf.

Service Provider. Before completing the appropriate Service Interval Record overleaf, please ensure you have carried out the service as described in this manual. Always use Worcester, Bosch Group specified spare parts when replacing all controls.

SERVICE 1 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi CO₂%:NOZZLE CHANGED? YES NO

F.G.T. °C FLUE PRESSURE:

COMMENTS

SIGNATURE

SERVICE 2 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi CO₂%:NOZZLE CHANGED? YES NO

F.G.T. °C FLUE PRESSURE:

COMMENTS

SIGNATURE

SERVICE 3 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi CO₂%:NOZZLE CHANGED? YES NO

F.G.T. °C FLUE PRESSURE:

COMMENTS

SIGNATURE

SERVICE 4 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi CO₂%:NOZZLE CHANGED? YES NO

F.G.T. °C FLUE PRESSURE:

COMMENTS

SIGNATURE

SERVICE 5 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi CO₂%:NOZZLE CHANGED? YES NO

F.G.T. °C FLUE PRESSURE:

COMMENTS

SIGNATURE

SERVICE 6 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi CO₂%:NOZZLE CHANGED? YES NO

F.G.T. °C FLUE PRESSURE:

COMMENTS

SIGNATURE

SERVICE 7 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi CO₂%:NOZZLE CHANGED? YES NO

F.G.T. °C FLUE PRESSURE:

COMMENTS

SIGNATURE

SERVICE 8 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi CO₂%:NOZZLE CHANGED? YES NO

F.G.T. °C FLUE PRESSURE:

COMMENTS

SIGNATURE

SERVICE 9 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

OFTEC REG No.

PUMP PRESSURE: psi CO₂%:NOZZLE CHANGED? YES NO

F.G.T. °C FLUE PRESSURE:

COMMENTS

SIGNATURE

SERVICE 10 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

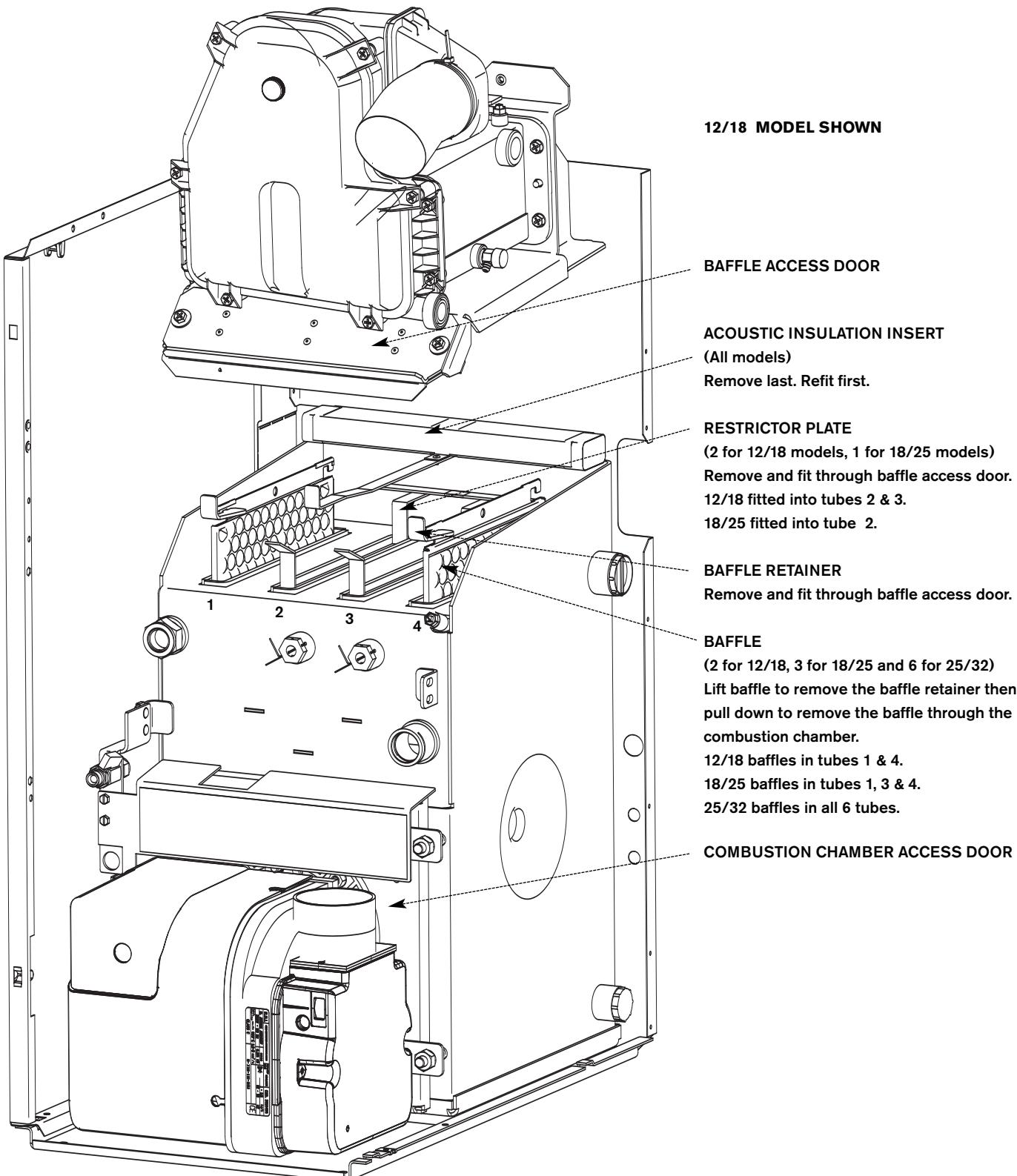
OFTEC REG No.

PUMP PRESSURE: psi CO₂%:NOZZLE CHANGED? YES NO

F.G.T. °C FLUE PRESSURE:

COMMENTS

SIGNATURE



If in the unlikely event the boiler does not give complete satisfaction, before calling for a service engineer, the installer should check the following:-

General checks

1. Is the mode switch in boiler mode (indicator on)?
2. Is there 230V across the boiler live and neutral terminals?
3. Is there 230V across the terminals 1 and N?
4. Is the polarity correct? (230V across live and earth, 0V across neutral and earth)
5. Is the air bled from the primary system?
6. Is the air bled from the oil supply?
7. Is the flue sized and routed correctly?

Boiler runs straight to lockout

1. Has the oil line been purged of air?
2. Where an air eliminator is used in conjunction with a top feed oil tank the non-return valve, (if fitted), should be removed from the oil dip pipe.

Boiler locks out at the start of a demand

(Heating off overnight for example)

1. If an air eliminator is being used, check that there are no leaks that allow air to be pulled into the oil supply.
2. If a two pipe oil supply is being used, has a non-return valve been fitted to the inlet pipe? Refer to the instructions for guidelines.

No domestic hot water

1. Is there a domestic hot water demand from the programmer and has the tank reached temperature?
2. Is the circulating pump operating?
3. Are the programmer, tank thermostat, circulating pump and diverter valve/zone valves wired correctly?
4. Is there 230V across 1 and N? If not there is no demand to the boiler from the controls or the controls wiring is not correct.

No central heating

1. Are both programmer and room thermostat on demand for central heating?
2. Are the room thermostat, programmer, circulating pump and diverter valve/zone valves (if CH and DHW system) wired correctly?
3. Is the circulating pump operating?
4. Is there 230V across 1 and N? If not there is no demand to the boiler from the controls or the controls wiring is not correct.

CONTACT INFORMATION

WORCESTER, BOSCH GROUP:

TECHNICAL:	08705 266241
SERVICE:	08457 256206
SPARES:	01905 752571
LITERATURE:	01905 752556
TRAINING:	01905 752526
SALES:	01905 752640
WEBSITE:	www.worcester-bosch.co.uk

WATER TREATMENT:

FERNOX	01799 550811
www.fernox.com	
SENTINEL	0151 420 9595
www.betzdearborn.com/sentinel	

FLUE TERMINAL GUARD:

PART No.	7 716 190 050
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EXCELLENCE COMES AS STANDARD

Worcester, Bosch Group

Cotswold Way, Warndon, Worcester WR4 9SW.

Tel. 01905 754624 Fax. 01905 754619

Worcester, Bosch Group is a trading name of BBT
Thermotechnology UK Ltd.

www.worcester-bosch.co.uk

8 716 112 700a (02.07)



Important addendum Secondary Heat Exchanger Replacement Seal

These instructions must be read in conjunction with the installation & servicing instructions supplied with the appliance.

For use on appliances: Greenstar Heatslave, Greenstar Danesmoor & Greenstar Camray Condensing oil fired boiler ranges.

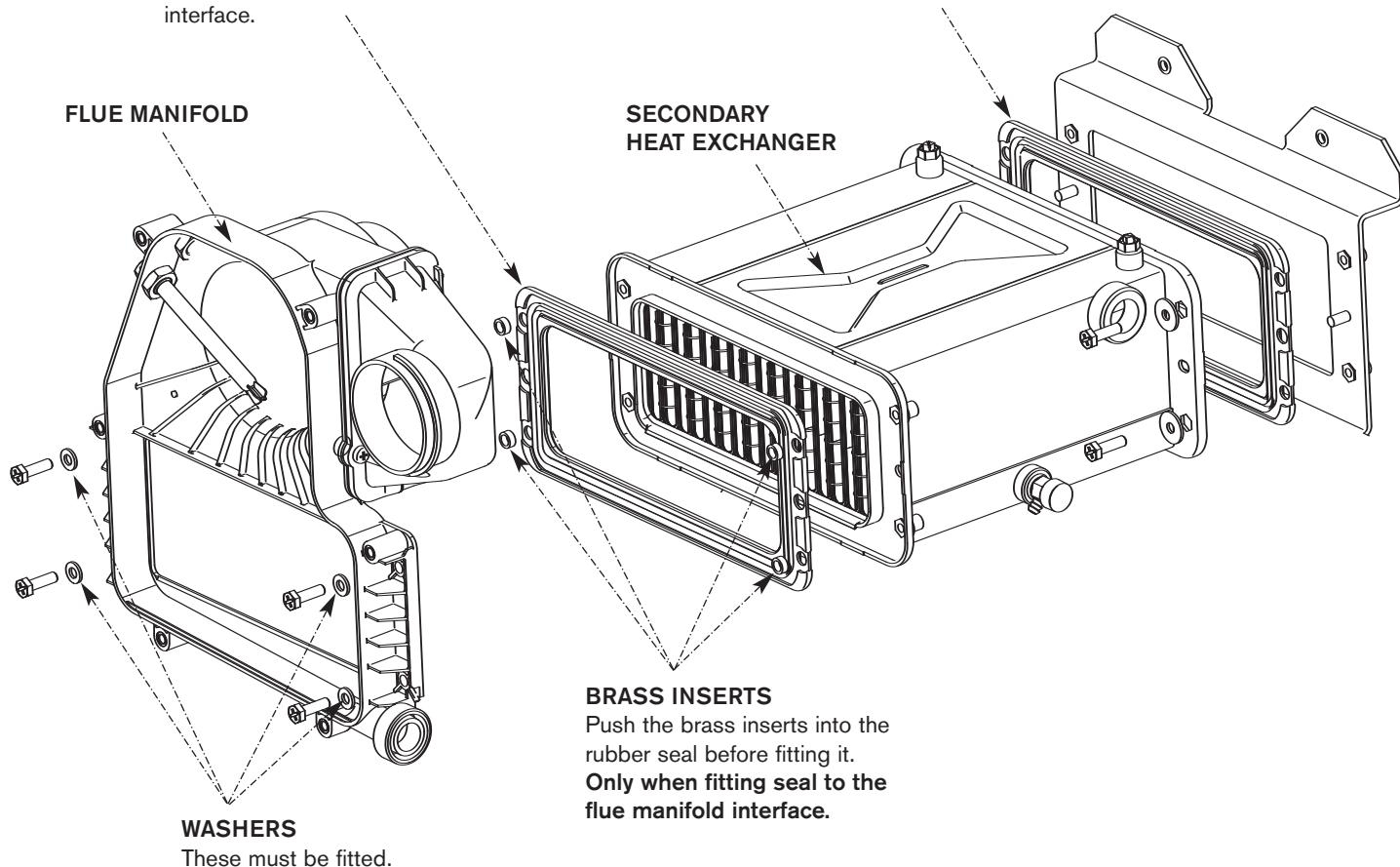
CAUTION: Isolate the water, electricity and oil mains supplies before starting any work and observe all relevant safety precautions.

RUBBER SEAL

IMPORTANT: The brass inserts must only be used when the seal is fitted on the front of the secondary heat exchanger to the flue manifold interface.

RUBBER SEAL

IMPORTANT: Do not fit the brass inserts into the rubber seal when used in the rear position.





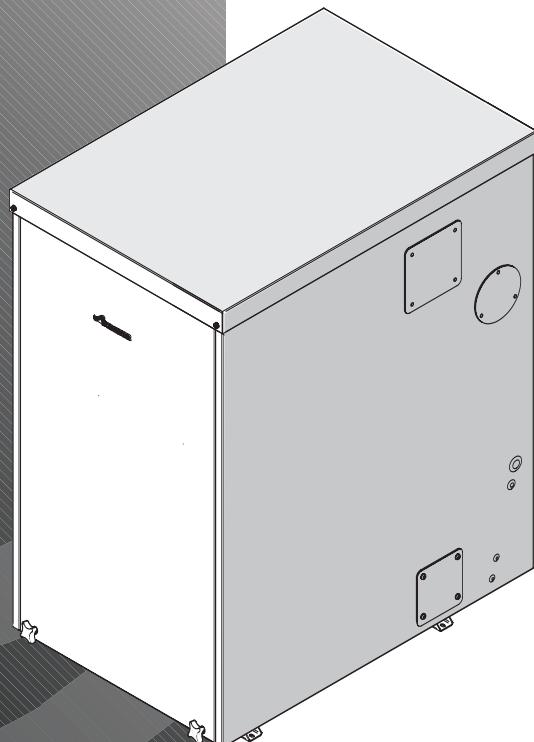
GREENSTAR CAMRAY EXTERNAL

EXTERNAL OIL FIRED CONDENSING BOILER USING BALANCED FLUE SYSTEM

FOR FULLY PUMPED OPEN VENT OR SEALED CENTRAL HEATING SYSTEMS AND
DOMESTIC HOT WATER WATER CYLINDERS

For use with the following Greenstar oil fired appliances:

Greenstar Camray External 12/18, 18/25, 25/32



THE APPLIANCE IS FOR USE WITH 28
SECOND KEROSENE ONLY

GB



USER INSTRUCTIONS & CUSTOMER CARE GUIDE

CONTACT INFORMATION

Worcester, Bosch Group:

Service call centres:

UK TEL: 08457 256206
 FAX: 08457 757536

SCOTLAND ONLY FAX: 01506 441687

Other enquiries: TEL: FAX:
MAIN RECEPTION: 01905 754624 754619
TECHNICAL: 08705 266241
SPARES: 01905 752571
LITERATURE: 01905 752556
SALES: 01905 752640
WEBSITE: www.worcester-bosch.co.uk

WATER TREATMENT:

FERNOX 01799 550811

www.fernox.com

SENTINEL 0151 420 9595

www.betzdearborn.com/sentinel

FLUE TERMINAL GUARDS:

WORCESTER, BOSCH GROUP

OIL FIRING TECHNICAL ASSOCIATION:

OFTEC 0845 6585080

www.oftec.org

USER INSTRUCTIONS & CUSTOMER CARE GUIDE

PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE OPERATING YOUR APPLIANCE.

THESE INSTRUCTIONS ARE APPLICABLE
TO THE WORCESTER, BOSCH GROUP
APPLIANCE MODEL(S) STATED ON THE
FRONT COVER OF THIS MANUAL ONLY AND
MUST NOT BE USED WITH ANY OTHER
MAKE OR MODEL OF APPLIANCE.

IF YOU ARE IN ANY DOUBT CONTACT THE
WORCESTER, BOSCH GROUP TECHNICAL
HELPLINE.

PLEASE KEEP THESE INSTRUCTIONS WITH
THE INSTALLATION AND SERVICING
INSTRUCTIONS IN A SAFE PLACE OR WITH
THE APPLIANCE AFTER INSTALLATION OR
SERVICING.

**DO NOT INTERFERE WITH ANY SEALED
COMPONENTS.**

ABBREVIATIONS:

Ø Diameter.

CH Central Heating.

DHW Domestic Hot Water.

TRV Thermostatic Radiator Valve.

IP Ingress Protection.

BF Balanced flue.

N/A Not allowed.

SEDBUK Seasonal Efficiency for Domestic
Boilers in the United Kingdom.

OFTEC Oil Firing Technical Association for the
Petroleum Industry.

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SAFETY PRECAUTIONS

OIL SMELLS, LEAKS OR FUMES FROM THE APPLIANCE:

- ▶ Extinguish any naked flames.
- ▶ Open windows and doors.
- ▶ Switch off the appliance electricity supply.
- ▶ Isolate the fuel supply to the boiler.
- ▶ Contact installer/service engineer.

HEALTH & SAFETY:

The appliance contains no asbestos and no substances have been used in the construction process that contravene the COSHH Regulations (Control of Substances Hazardous to Health Regulations 1988). Where applicable, the CE mark indicates compliance with relative EU Directives.

COMBUSTIBLE AND CORROSIVE MATERIALS:

Do not store or use any combustible materials (paper, thinners, paints etc.) inside or within the vicinity of the appliance.

The combustion air must be kept clear of chemically aggressive substances which can corrode the appliance and invalidate any warranty.

FITTING & MODIFICATIONS:

Fitting the appliance and any associated controls may only be carried out by a competent engineer in accordance with the relevant Installation Regulations.

Flue systems must not be modified in any way other than as described in the fitting instructions.

Any misuse or unauthorised modifications to the appliance, flue or associated components and systems will invalidate the warranty. The manufacturer accepts no liability arising from any such actions, excluding statutory rights.

This appliance is suitable for use with 28 second kerosene only, no other fuel must be used.

SERVICING:

The user must have the system regularly serviced by a competent, qualified OFTEC registered engineer using approved spares, to help maintain the economy, safety and reliability of the appliance.

The appliance should be serviced once each year after installation unless the installation conditions and usage demand more frequent services.

DO NOT OPERATE THE APPLIANCE WHEN:

- ▶ The appliance, flue or system is incorrectly fitted, faulty or damaged.
- ▶ The flue terminal outlet or air inlet is obstructed or damaged.
- ▶ There are fumes, fuel leaks or fuel smells from the fuel supply, appliance or flue system.
- ▶ The system is empty, frozen or unpressurised (sealed systems).
- ▶ The condensate pipe is blocked or restricted.
- ▶ The appliance clearances are inadequate.
- ▶ The air supply is restricted.

EXCELLENCE COMES AS STANDARD

Thank you for purchasing a Greenstar Camray oil fired condensing boiler from Worcester, Bosch Group. The company prides itself on manufacturing boilers to the strictest quality control standards throughout every stage of production.

Worcester, Bosch Group has led the field in innovative appliance design and performance for more than 40 years. This heritage means all products are of exceptional quality and proven reliability.

The condensing range, in particular, is extremely energy efficient, converting more of the fuel consumed into heat offering you economical running costs and value for money. It sits in SEBUK band A, at the top of the energy rated appliances available.

There is also the assurance of our no-nonsense parts and labour guarantee - backed up by an optional servicing and maintenance contract to keep your boiler operating at peak condition and efficiency.

To find out more about Worcester, Bosch Group, use the 'Contact Information' shown on the inside front cover.

Read these instructions carefully to get the best from your appliance.

CENTRAL HEATING SYSTEMS:

During the first few hours of operation of the central heating system, check that all radiators are being heated at an even rate.

If the top of a radiator is at a lower temperature than the bottom then it should be vented by releasing air through the venting screw at the top of the radiator. Ask your installer to show you how this is done. Repeated venting in sealed systems will reduce the quantity of water in the system and this must be replenished for safe and satisfactory operation of the appliance.

When excessive venting or water leaks are found in the system you must contact a service engineer to inspect the installation and rectify any fault.

Only use additives compatible with the appliance and system. Use of incompatible additives can cause damage and will invalidate the appliance guarantee.

Sealed heating systems:

Where the appliance is fitted to a sealed heating system your installer will inform you of the minimum and maximum pressure which must be indicated on the pressure gauge.

Regularly check the pressure is maintained and contact your installer or maintenance engineer if there is a noticeable, permanent drop in pressure. If the system loses pressure it should be repressurised and the cause of the loss investigated.

CONDENSATE:

This is a high efficiency appliance using condensing technology which will under normal operation produce a regular discharge of condensate to drain and at times, give out a plume of water vapour from the flue terminal.

GENERAL INFORMATION

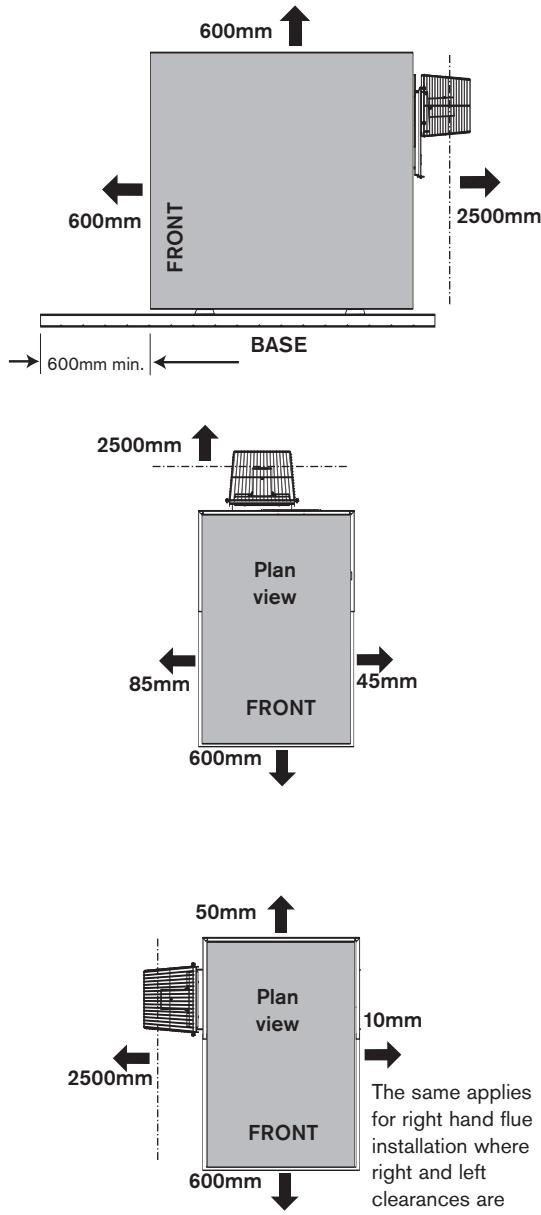
ROOM THERMOSTAT:

A room thermostat must be fitted to control the central heating. Refer to instructions supplied with the room thermostat for information on siting and setting.

THERMOSTATIC RADIATOR VALVES:

It is recommended that this type of valve is fitted to all but one of the radiators (or at least those in the sleeping accommodation). The remaining radiator, which must be where the room thermostat is located, should be un-controlled and must be left open.

INSTALLATION & SERVICING CLEARANCES



GENERAL INFORMATION

WARNING:

External equipment operating at 230 Volts must not be serviced or repaired during adverse weather conditions.

Do not use pressure washers or steam cleaners on this appliance or cabinet.

FUEL:

This appliance is designed to use 28 second kerosene, no other fuel must be used.

BOILER LOCATION:

WARNING:

This boiler must not be installed where there is a potential for excessive ground water coverage.

To prevent "wetting" it is recommended that the flue terminal faces away from walls.

Never allow the flue terminal or air inlet to become obstructed by plants or any other objects.

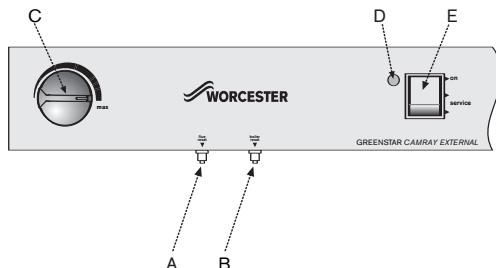
This boiler is only suitable for installing externally at a suitable location onto a fixed, permanent, rigid surface capable of supporting the boiler weight. Wood and tarmac hardstandings are not recommended.

The boiler must be installed on a flat level surface to ensure that condensate does not enter the primary heat exchanger.

The cabinet is not load bearing, and only provides weather protection for the boiler inside.

There must be sufficient hard standing and access around the boiler for servicing.

CONTROLS



To remove the front panel, unscrew the "easy grip" screws on each side of the base of the front panel. The panel will then drop down and can be removed (see illustration below).

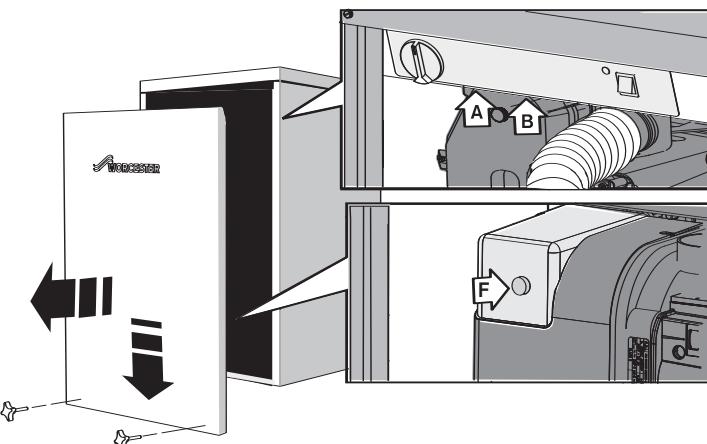
- A Reset button - flue thermostat (behind front panel).
- B Reset button - heating (behind front panel).
- C Temperature control.
- D Boiler mode indicator.
- E Mode switch.
- F Lockout indicator/reset button (is located behind the front panel on the burner control box see 'reset button locations' below).

Reset Button Locations

All Models

Remove front panel to access all reset buttons.

The Flue Thermostat Reset Button (A) and Heating Thermostat Reset Button (B) are located beneath the boiler control panel.



The Lockout Reset Indicator/ Button (F) is located on the burner control box which situated on the burner at the base of the appliance.

OPERATING THE APPLIANCE

SWITCHING THE BOILER ON/OFF:

- ▶ To switch on the boiler; turn on the water, oil and electricity supply to the boiler.
- ▶ Check the mode switch is in boiler mode with the indicator illuminated.
- ▶ Check the programmer/timer is correct and it is set to ON.
- ▶ Set the room thermostat to the desired setting.
- ▶ Open and set thermostatic radiator valves as required.
- ▶ Turn the boiler water temperature control to the required setting.
- ▶ To switch off the boiler; turn the programmer/timer to OFF for heating and hot water. *If the appliance is left unused and exposed to freezing conditions; shut off all the mains supplies, isolate the boiler and drain the system and boiler.*

CENTRAL HEATING TEMPERATURE CONTROL:



SETTING RADIATOR TEMPERATURE:

- ▶ Turn the control clockwise to increase the radiator water temperature.
- ▶ Turn the control anti-clockwise to reduce the radiator water temperature.

The minimum and maximum ranges of the heating control positions are approx. 55°C to 81°C.

CONTROLLING CENTRAL HEATING:

- ▶ Set the programmer/timer to the correct time with the required ON/OFF periods. (Refer to the user guide supplied with the programmer).
- ▶ Turn the room thermostat to the temperature required.
- ▶ Set thermostatic radiator valves to the required temperature for each room.

OPERATING THE APPLIANCE

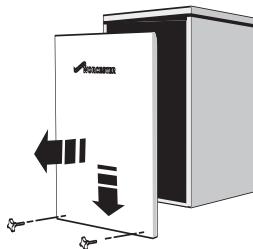
FROST PROTECTION:

- ▶ A frost thermostat is fitted to the appliance to protect the appliance and system from the risk of freezing.
- ▶ The boiler mode indicator light **MUST** be illuminated for the frost protection to operate.

In the unlikely event that there is no hot water or heating, remove the front panel and check for lockout or other fault conditions.

Check page 9 for fault conditions.

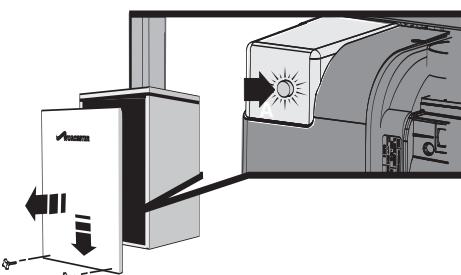
1 ACCESSING CONTROLS:



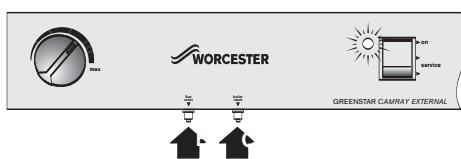
2 NORMAL OPERATION:



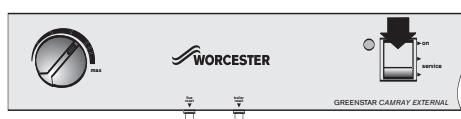
3 BOTH LIGHTS ON:



4 BOILER MODE LIGHT ON LOCKOUT LIGHT OFF:



5 BOTH LIGHTS OFF



OPERATING THE APPLIANCE

FAULT CONDITIONS:

The 'Boiler mode' and 'Lockout' lights can indicate some basic fault conditions.

1 Accessing Controls:

- Unscrew the easy grip screws on the bottom of the front panel. The panel will drop down and can be removed.

2 Normal operation:

Boiler mode light ON

The appliance is in boiler mode, with a demand for heat from the controls.

3 Both lights on:

Boiler not firing

- Check the level in the oil tank.
- Press the Reset button (A). The boiler should fire.
- If there is no response, wait 2 minutes and press the Reset Button (A) again.
- If Lockout light stays on, **do not** attempt further resets. Contact your Service Engineer for advice.

4 Boiler mode light on, lockout light off:

Boiler not on -

No heating/hot water

- Press Reset Button (B), press Reset Button (C) both are below the fascia.
- If the boiler remains off, contact your Service Engineer for advice.
- If this fault re-occurs contact your Installer or Service Engineer.

5 Both lights off:

Boiler not on -

No heating/hot water

- Ensure there is power supply to the boiler.
- Check the programmer is set to ON and thermostat is calling for heat.
- Ensure that the Service switch is in Boiler mode.
- If there is power supply to the boiler contact your service engineer for advice.

TIPS ON ENERGY SAVING

Heating economically:

The boiler is designed to provide a high level of comfort while keeping oil consumption and the resulting environmental effect as low as possible.

The central heating control on the boiler should be set as low as possible while still maintaining a comfortable room temperature.

The temperature of each room can be set individually using the thermostatic radiator valves (except the primary room with the room thermostat).

Roof insulation:

Around 30% of the heat loss from a property is through the roof. Replace any old insulation with new insulation, preferably to a minimum thickness of 200mm.

Window frames:

Single glazed windows, particularly those with steel frames, can lose a great deal of heat.

Consideration should be given to replacement with PVCu or wooden framed double glazed units.

Curtains:

Lined curtains, or heavier full length curtains can provide excellent insulation. However, always ensure that the curtains do not drape over radiators.

Draughts:

Try to ensure that draughts around doors, windows, letterboxes and keyholes etc., are reduced by using a suitable draught excluder.

Warning: do not block or seal any air vents that are installed to ensure the central heating boiler (or other appliance) operates safely.

TIPS ON ENERGY SAVING

Room thermostats:

Reducing the setting of the room thermostat by 1°C can reduce fuel consumption by up to 10%.

New control systems:

Upgrade your heating control system with the latest equipment available. The minimum level of control for a heating system is a programmer/timer, interlocking room thermostat and thermostatic radiator valves.

Radiators:

More often than not radiators will be sited underneath a window, so the warm air from the radiator heats the colder incoming air from the window.

The performance of the radiator will be affected if the curtains are allowed to drape over the radiator or shelves are fitted above it.

The positioning of furniture and tables in front of the radiator should also be avoided.

It is advisable to manually adjust all radiator valves every 2-3 months to prevent them from sticking. It is also important that the plastic tops of all valves are always in position and not cracked or damaged to help prevent accidents. Care should be taken when vacuum cleaning carpets to avoid damage to valves and pipework.

The heating system and the outputs of the radiators have been carefully selected by your installer. The temperature obtainable in any given room is dependent on all radiators being operated at the same time. If you decide to turn off radiators in unused rooms, spare bedrooms etc., you may experience slightly lower room temperatures in rooms adjacent to unheated rooms.

MAINTAINING YOUR APPLIANCE

Your new appliance represents a long term investment in a reliable, high quality product.

In order to realise its maximum working life and to ensure it continues to operate at peak efficiency and performance, it is essential that servicing and maintenance checks are performed at least once a year by a competent person.

If you would like to know more about servicing options from Worcester, Bosch Group please visit www.worcester-bosch.co.uk.

Please tick the appropriate box on your warranty registration card for further details on the Worcester, Bosch Group service contract.

In addition to the service contract we are pleased to offer a one-off annual service or breakdown cover.

When your appliance requires servicing please contact the Worcester, Bosch Group contact centre (see inside front cover for details).

Maintenance tips:

Regularly check the oil level in the tank.

Regularly check the system pressure, ask your installer for guidance.

Do not obstruct the flue outlet or the air inlet.

Do not pressure wash or steam clean the appliance or its cabinet.

To clean the cabinet wipe down with soapy water.

FAULT FINDING

Problem	Cause	Remedy
Desired room temperature is not reached	Thermostatic radiator valve(s) set too low	Increase thermostatic radiator valve setting(s)
	Room thermostat set too low	Increase room thermostat setting
	Temperature control set too low	Increase temperature control setting
	Air trapped in heating system	Bleed radiators; if fitted to a sealed system recharge heating system
Desired room temperature exceeded by large amount	Radiators are too hot	Turn down thermostatic radiator valves / room stat
Temperature rises instead of falling	Clock is incorrectly set	Check setting
No display or control unit does not respond	Momentary power failure	Switch off appliance at master switch, wait a few seconds then switch on again
Hot water temperature too low	Hot water temperature set too low	Check setting
	Hot water not in timed period on the programmer	Check programmer settings

FAULT OR BREAKDOWN

This appliance is supported in the UK by Worcester, Bosch Group, part of BBT Thermotechnology UK Ltd.

Specialist factory trained Service Engineers are available to attend in the unlikely event that a breakdown occurs on this appliance.

No charge will be made for parts and/or labour providing:

- ▶ An appliance fault is found and the appliance has been installed within the past 24 months. Reasonable evidence of this must be supplied on request.

A call-out charge will be made where:

- ▶ The appliance has been installed for over 24 months OR
- ▶ Our Field Service Engineer finds no fault with the appliance (see Note) OR
- ▶ Evidence cannot be provided that the first year service inspection has been carried out. (i.e. an entry in the service interval record found at the rear of the appliance installation and servicing manual) OR
- ▶ The cause of breakdown is misuse or fault found with other parts of your plumbing/heating system, or with equipment not supplied by BBT Thermotechnology UK Ltd.

Note: NO APPLIANCE FAULT IS FOUND ON OVER 30% OF ALL SERVICE CALL OUTS.

Please read this guide carefully to gain a good understanding of the operation of your appliance. In the case of a suspected fault, refer to the fault finding section of this guide.

If in doubt contact Worcester, Bosch Group quoting the boiler serial and model number. These numbers are printed on a Data Label which is located as shown opposite. (You can record this information on the inside back cover of this manual.)

In the unlikely event of an appliance fault or breakdown please call the contact centre (see inside front cover for details). Your service administrator will arrange for an Engineer to call with the minimum of delay. Under normal

circumstances this will be from 1 to 3 working days (excluding weekends) for priority breakdown situations (no hot water and/or heating).

Invoices for attendance and repair work carried out on this appliance by any third party will not be accepted.

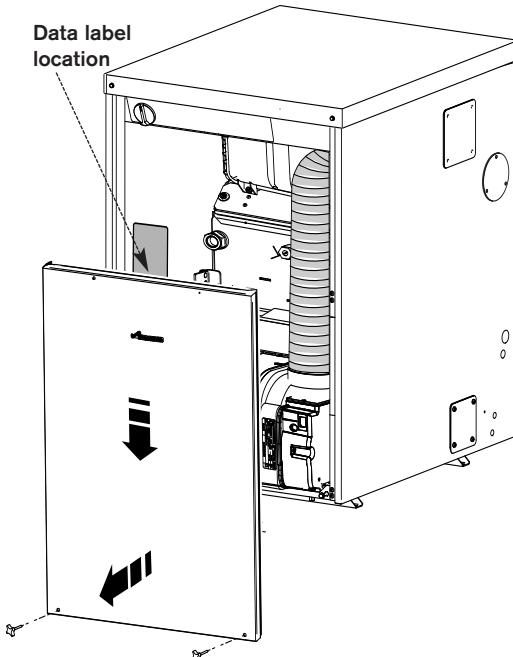
APPLIANCE DATA LABEL

The data label can be found on the inside of the left hand panel. To access:

- ▶ Unscrew the two easy grip screws on the bottom of the front panel. The panel will drop down and can be removed.

To replace:

- ▶ Push the front panel up behind the top panel, push in and secure with the easy grip screws.



YOUR GUARANTEE

This appliance is guaranteed against faulty materials or workmanship for a period of 24 calendar months (60 months for the primary heat exchanger) from the date of installation subject to the following conditions:

- ▶ That during the period of this guarantee any components of the unit which are proved to be faulty or defective in manufacture will be exchanged or repaired free of material charges and free of labour charges if repaired directly by BBT Thermotechnology UK Ltd. Invoices for attendance and repair of this appliance by third parties will not be accepted for payment by BBT Thermotechnology UK Ltd.
- ▶ That the householder, when requested, may be asked to prove the date of installation, that the appliance was correctly commissioned and, where appropriate, that the 12 month service inspection has been carried out to the satisfaction of BBT Thermotechnology UK Ltd. The guarantee card must then be returned within 30 days of installation.
- ▶ That any product or part thereof returned for servicing under the guarantee must be accompanied by a claim stating the Model, Serial Number and Date of Installation.
- ▶ That BBT Thermotechnology UK Ltd, will not accept responsibility for damage caused by faulty installation, neglect, misuse or accidental damage and non-observance of the instructions contained in the Installation and Users Instructions leaflets.
- ▶ That the appliance has been used only for normal domestic purposes, for which it was designed.
- ▶ That this guarantee applies only to equipment purchased and used in mainland Great Britain.

This guarantee is given in addition to all your normal statutory rights.

Worcester, Bosch Group is a trading name of BBT Thermotechnology UK Ltd.

GUARANTEE

GUARANTEE REGISTRATION

You should complete and return the postpaid Guarantee Registration Card within 30 days of installation.

Returning your card will register you as the owner of your new appliance and will assist us in maintaining an effective and efficient customer service by establishing a reference and permanent record for your boiler.

This does not affect your statutory rights.

For your own record:

Model _____

Serial No. _____

(See identity label inside appliance casing)

Type / size _____

Date of installation _____

Installer details _____

NOTES

NOTES

USER INSTRUCTIONS & CUSTOMER CARE GUIDE

EXCELLENCE COMES AS STANDARD

Worcester, Bosch Group

Cotswold Way, Warndon, Worcester WR4 9SW.

Tel. 01905 754624 Fax. 01905 754619

www.worcester-bosch.co.uk

Worcester, Bosch Group is a trading name of BBT Thermotechnology UK Ltd.

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